THE Airman

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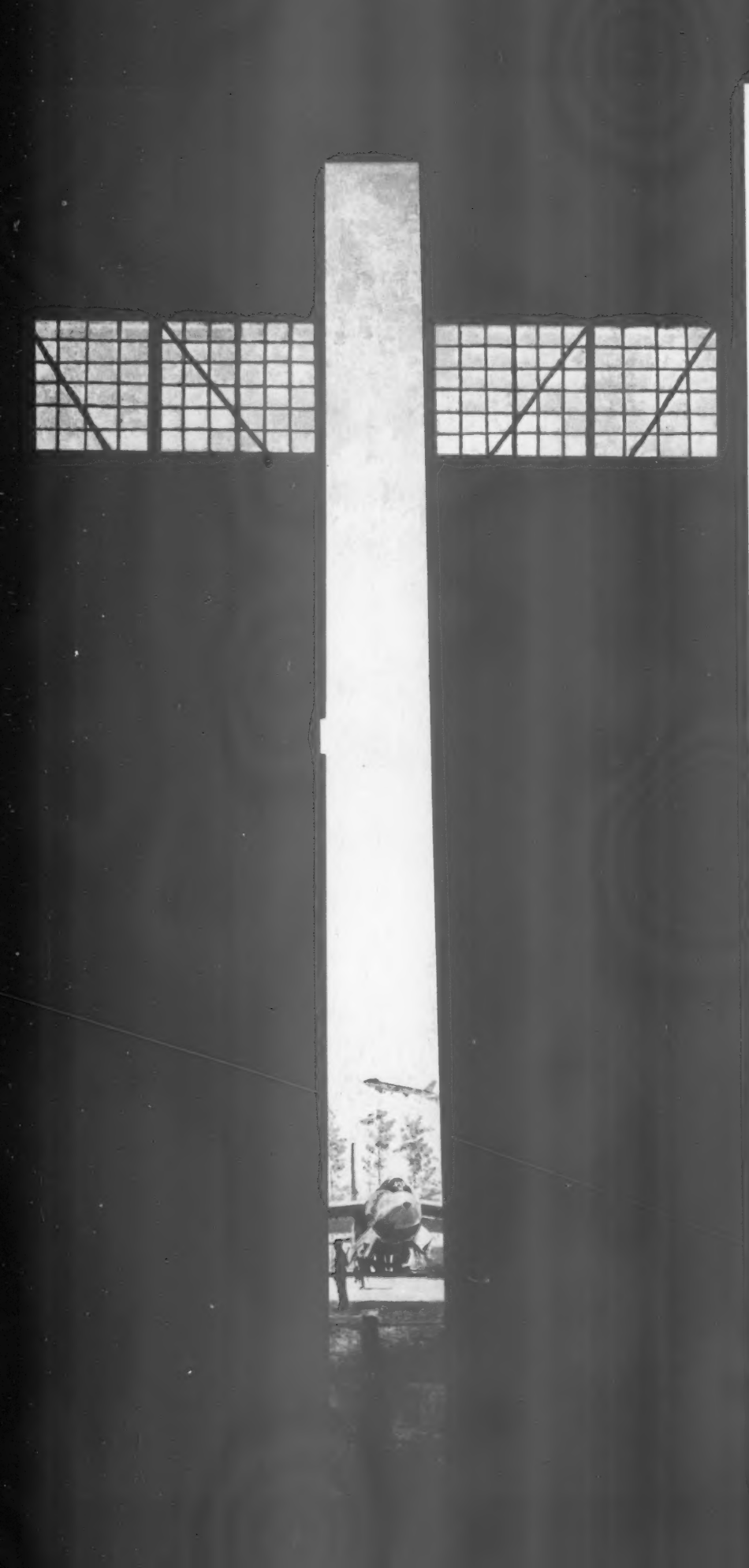
AEROSPACE WEAPONS AND NATIONAL SECURITY—GENERAL THOMAS D. WH



. . . Peace be unto yo
St. John 20:19

THE Airman

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CONTENTS

AEROSPACE POWER AND NATIONAL SECURITY . . . 2
The Chief of Staff, USAF, discusses aerospace philosophy

FIGHT BEFORE THE BELL 6
USAF Security Forces— Nemesis of saboteurs

GLIMPSES OF HISTORY 11
Colorful evolution of the Provost Marshal

RUNAWAY PROP 12
Next to fire, this is what an airman dreads most

PACIFIC PARTNERSHIP 15
Air Defense in the Pacific—Allied teamwork

TORNADO TRACKERS 18
How weathermen watch for the killer storms

ROAR OF THE BEAST 24
. . . and the havoc that the killers can cause

TEACHING TOMORROW 26
The knock of opportunity for prospective retirees

THE GUARD GOES GLOBAL 38
An expanded role for the weekend warrior

B-70 ON COURSE, ON TARGET 43
Progress report on the fabulous Valkyrie

THE EMBALMER AND THE COWBOY 44
An unlikely combination to produce a Medal of Honor

CIRCUIT-RIDING JUDGE OF '61 48
An old concept resurrected to meet modern needs

DEPARTMENTS

LETTERS TO THE EDITOR 1
SLANTS ON SPACE . . 31
AIRMAN'S WORLD . . 33
YOU SHOULD KNOW . 42
CLUES FROM YOUR CALENDAR 46

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THE AIRMAN is primarily a medium for the exchange of ideas and information among Air Force personnel. Readers are encouraged to submit articles, short subjects, photographs, and artwork. All contributions will be given consideration; suggestions and criticisms are welcomed. Opinions expressed by individual contributors do not necessarily reflect the official viewpoint of the Department of the Air Force. All photographs are official USAF photos unless otherwise designated.

LETTERS TO THE EDITOR

Our Position

Sir: I have just completed the January issue and the article entitled *This Is Our Position.* I realize that it is probably copyrighted, but I believe this should be *must* reading for everyone in the United States. My congratulations on an excellent job.

Luther C. Inge
APO 10, New York, N. Y.

• *The article to which Mr. Inge refers is a chapter, extracted from the book* FLYING SAUCERS AND THE U. S. AIR FORCE, *which was written by Lt. Col. Lawrence J. Tacker and reprinted by permission of the publishers, D. Van Nostrand, Inc. We reviewed the book in our February issue and it is currently available on most newsstands.*

★ ★ ★

Answers Answer

Sir: A letter in your December issue implies that I was inaccurate when I said that, in summer, Greenland has "more green" than England. I should like to quote Vilhjalmur Stefansson's book *Greenland* to support my contention. This recognized Arctic scholar writes that the snow-free area in Greenland covers about "110,000 square miles, and that is more than the whole of Great Britain, from Wales to northern Ireland."

A2C Paul Stein
Brooklyn, N. Y.

• *As Airman Stein noted in his previous letter, most of the people who serve in Thule seldom see the area of Greenland which is snow-free. Consequently, they leave with the impression of overall Arctic conditions. We trust the above quote will settle the argument.*

★ ★ ★

Five-Man Crew

Sir: In following my usual custom of enjoying the reading of each issue of THE AIRMAN, I did come across something which, for the first time, raised a question in my mind about my historic recollection. On page 11 of the January issue in *Clues From Your Calendar,* it says, "Take New Year's Day, 1929. A pair of Air Corps officers went up in a plane called the *Question Mark.* . . . Their names: Maj. Carl Spaatz and Capt. Ira Eaker." I'm sure that you would not

(Continued on page 30)

NATIONAL

THE CHARACTERISTICS OF MILITARY WEAPON SYSTEMS, and particularly aerospace systems, are changing more swiftly today than ever before in history. Hence, it is difficult to sort out the basic philosophies underlying the development of each new system —the reasoning which, in effect, forms the framework for the pattern of weapon development. I would like to discuss some of these philosophies which, perhaps, are not as romantic as the impressive names of some of our newer Air Force weapons—*Thor, Atlas, Titan, Valkyrie, and Minuteman*—but which, nevertheless, in my opinion are of vital importance to all members of the Air Force and the American people.

All of us would agree, I am sure, that this country faces a continuously growing danger in the form of international Communism. Further, I think we would all agree that it is the military side of this threat, to the exclusion of all others, which is giving impetus to the rapid pace of our own defense activities.

The Communist war machine is a large, modern establishment. It contains offensive and defensive forces designed to meet the requirements of the nuclear age—plus large conventional forces with a particular ability to fight wars in areas directly contiguous to the Communist bloc. The Soviets have a mixture of offensive missiles, bombers and fighters, and a modern air-defense system. They have a growing naval force, including the largest submarine force the world has ever known. And they maintain large ground armies equipped with nuclear weapons. Their military machine is supported by a growing and efficient economy, an economy which, because of strict state control, is able to switch on a moment's notice to forced-draft programs as the Soviet leaders so decide.

Furthermore, in any evaluation of the Communist threat we cannot disregard the close partnership between Soviet Russia and Communist China. Today, the Chinese are not very far advanced technically, but they have tremendous ground armies, a rapidly increasing population, and possess a wealth of untouched natural resources. Permit me to draw an analogy.

A Lesson From History

You will recall that Japan was first opened to the outside world in 1854. They received little technical help and yet 50 years later, in the battle of Tsushina Strait in 1904, they defeated the Russians. Within 50 years, the Japanese had progressed from a remote, unknown and technologically backward nation to the point where they were able to defeat a first-class western power. The Chinese—and there are many, many more Chinese than there are Japanese—have a much bigger country and possess resources that the Japanese didn't have. In addition, they have the help of a first-class technical power—the USSR. This is most significant—and could portend a grim picture for the future.

It is my firm conviction that the ability of the United States to meet the military portion of the growing Communist threat during the coming years must be based primarily upon this country's dominance in military aerospace power. I say this while fully recognizing the great threat contained in large Communist ground and

To aid in reducing the vulnerability of weapons, mobile missile forces will be placed aboard roving railroad trains.

AEROSPACE POWER AND SECURITY

by General Thomas D. White, *Chief of Staff, USAF*
Adapted from a recent address to the Montgomery, Ala., Chamber of Commerce

naval forces. However, for the first time in the history of our nation, this country is open to sudden nuclear surprise attack. The Communist weapons which can accomplish this devastating blow are—and will continue to be—aerospace weapons in the form of aircraft, ballistic missiles, and manned and unmanned aerospace vehicles. The offensive and defensive systems which will assure our ability to defend ourselves, to carry the fight against our attackers and permit the successful pursuit of our national objectives will also be primarily aerospace weapons.

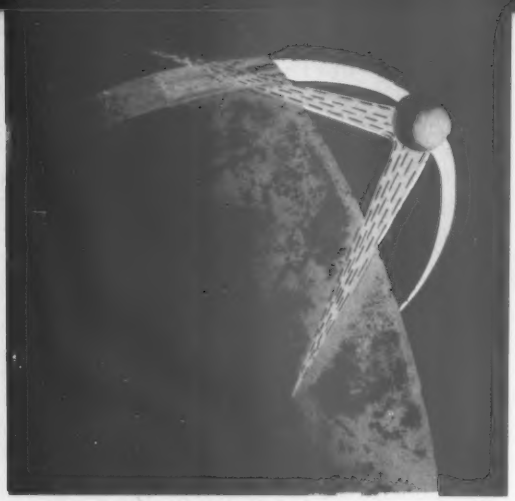
Air Force Responsibility

The primary task and responsibility of the Air Force —until such time as worldwide disarmament under a positive system of controls and inspection is achieved— is to provide dominant aerospace forces which will ensure the aerospace security of our nation. This power, in conjunction with forces of the Army, Navy, the Marines, and our allies, must have the unquestionable capacity to repel and decisively counter any attack against our nation or our allies. These total forces must possess the capability to destroy the military forces which would hurt us and be strong enough to prevail under any circumstances.

A by-product of this type of fighting strength is the greater hope for successful deterrence of aggression. International Communism understands the language of strength, and only strength which would prevail can serve as an effective deterrent. This same type of strength also is a positive and useful instrument in the pursuit of national political, diplomatic and economic objectives. The overriding factor from the point of view of the Department of Defense, however, is that should deterrence fail—and this could happen— there must be no question that our military forces are strong enough to defeat an enemy. Boiled down to one indisputable fact, the military services are in business to fight and win a war if one should occur.

Under these conditions, our military posture must be one in which *first*, the vulnerability of our strong

Newer missile bases are being hardened, heavily protected and placed underground in remote, widely separated locations.



Satellite systems . . . to exploit . . . any warning.
Illustration: Page Communications Engineers

offensive and defensive forces is reduced to a minimum; *second,* the opportunity for an opponent to catch us by surprise is cut down drastically; and *third,* it must be one in which our command and control systems are capable of making decisions and dispensing them to our forces in a matter of minutes. These are not just theories to be contemplated and discussed. They are cold, hard facts upon which we must act quickly and ably if we wish to see our way of life endure.

Let us take a look at what we are doing to achieve the posture I have just outlined.

Several things can and are being done to reduce the vulnerability of our forces. Our newer missile bases and facilities are being hardened and dispersed—that is, they are being heavily protected and placed underground in widely separated locations. We also are planning mobile missile forces aboard roving railroad trains. An around-the-clock air alert for a portion of our long-range jet bomber force is also being provided for. This will be particularly valuable in the interim period when our systems for warning against ballistic missiles are under construction. In addition, Air Force units worldwide are on ground alert with the ability to react to warning of attack—within minutes. These are actions generally known and concurred in by the American people. However, despite such protective measures, an aggressor nation having superior military intelligence still has a tremendous advantage.

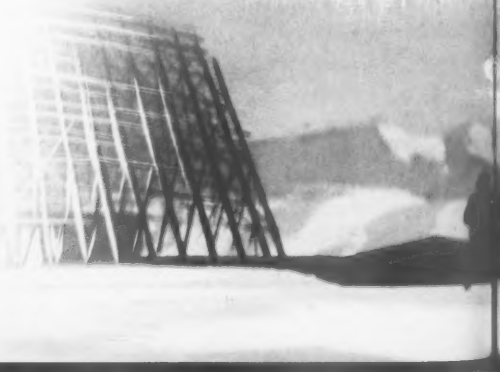
The Importance of Warning

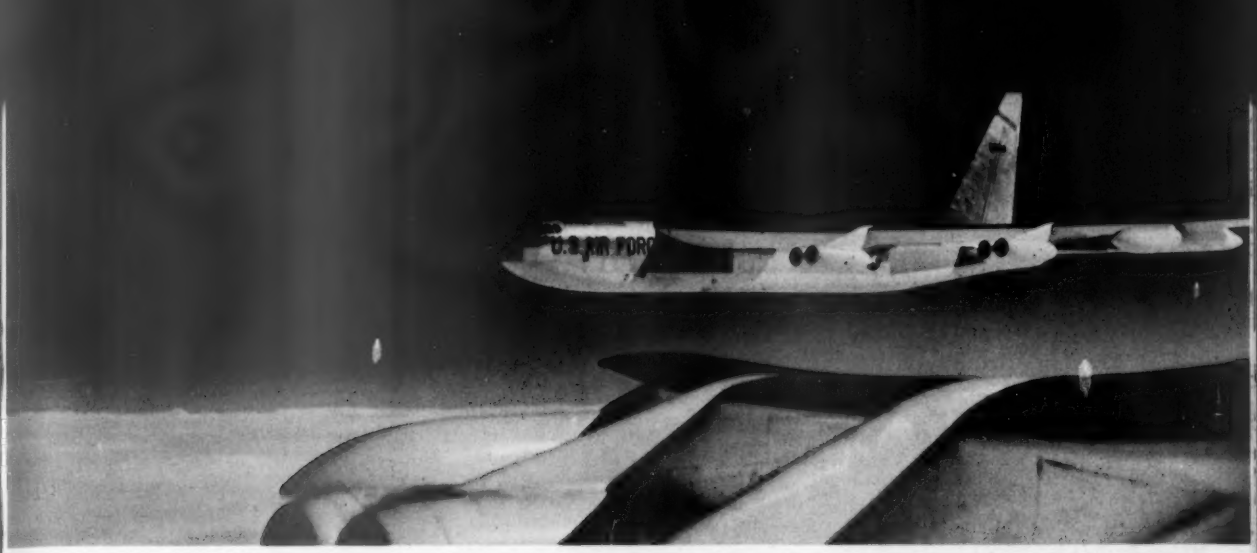
Our national policy, supported historically by our actions, firmly establishes the United States as a non-aggressor nation. Therefore, it is obvious that all possible measures must be taken by the United States to improve its warning capabilities against sudden surprise attack. The need for such warnings is the reason for our urgency in bringing the latest systems into existence at the earliest possible moment. Currently, I would say that our warning system against an attack by jet aircraft is highly effective. We also have the initial segment of a ballistic missile warning system in operation. Here, however, we have a long way to go in completing a total system which will be both effective and reliable.

To permit immediate response to such warning, we need command and control systems—which basically depend upon reliable, adequate, secure, and instantaneous communications. Here again, only the most advanced technology can give us the type of communications between our globally dispersed land, sea, and air forces which will meet the demands of the missile age. Communications satellite systems, for example, would enable us to exploit with realism and confidence any warning we may get—even if the time available is only 15 to 30 minutes.

There is a tendency to think of such systems only as vast mechanisms of metal and electronic gadgetry, which indeed they are. Yet the Air Force must view them not only as tools to perform the command and control functions, but also as instruments to be managed by people and improved organization. And so during the past several years, as we have carefully examined our requirements for advanced command and control systems, we have also been continuously analyzing the organization and management of the units which operate this hardware. One of the areas which has received the closest scrutiny is the operation of our Aerospace Communications Complex, a global communications system which provides, and must

Air Force units worldwide are on ground alert with the ability to react within minutes in response to warning of attack.
Photo: Skyline Magazine





An around-the-clock air alert for a portion of the long-range bomber force is also being provided for.

continue to provide in the future, the major long-haul circuits for all of our command and control systems.

The responsibility for operating these extensive facilities—both within the continental United States and in areas overseas—has been traditionally divided among many Air Force commands and agencies. However, a highly successful experiment in the Pacific and Alaska areas verified the desirability of combining all but certain very specialized types of Air Force communications into a single organization responsible directly to the Chief of Staff. This new command—the Air Force Communications Services—will be established on 1 July 1961.

Our new organizational approach to operating Air Force worldwide communications holds great promise of providing a more effective system at considerable savings in manpower and dollars. It will enhance our ability to function as a member of the overall Defense Communications System which is under the operational control of the new Defense Communications Agency.

Many paths are open to improved combat capabilities—some in the development of advanced weapon systems, others in the more efficient management of our forces. In choosing the routes we must follow, one objective must always be kept foremost in mind: The end result of our efforts must be the continued possession of dominant military strength. Should deterrence fail, dominant military force—backed by strong moral fiber—will be the only sure guarantee of victory. Lesser military strength cannot win should war be forced upon us, and as a deterrent it would be an open invitation to increased Communist pressures.

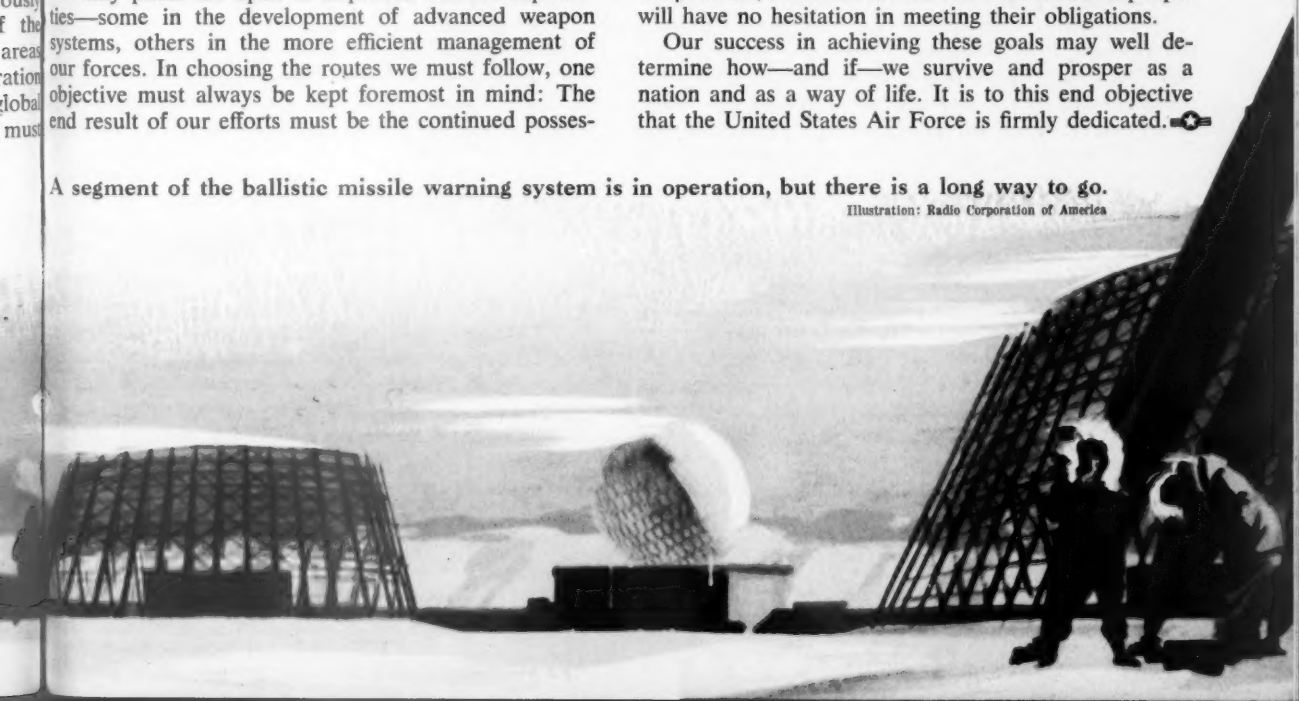
Military Strength and National Determination

Military strength—as provided by the American people—is primarily our business in the Department of Defense. But national determination which is, in fact, the most important ingredient of national strength, is primarily the job of the many millions of American people throughout our great country. Our task in the coming years will not be easy. It will require personal sacrifices on the part of all of us. We face determined opponents to whom hardship and sacrifice are no strangers. Minimum or half-hearted approaches to the future security of our nation will not do the job. Just as I feel strongly that we can lick the military side of the problem, I also am certain that the American people will have no hesitation in meeting their obligations.

Our success in achieving these goals may well determine how—and if—we survive and prosper as a nation and as a way of life. It is to this end objective that the United States Air Force is firmly dedicated.

A segment of the ballistic missile warning system is in operation, but there is a long way to go.

Illustration: Radio Corporation of America



FIGHT BO

by Capt. Jud R. Sturm, USAF (Ret.)

THE BASE LOOKED QUIET, baking under the [illegible] noon sun. Magnolias lined the rear areas, [illegible] the runways ended. The perimeter road cut a sa[illegible] path just inside a chain link fence separating the [illegible] from the cypress swamp that stretched for 10 mi[illegible] to the town.

There were five strangers posing as tourists in that drowsy town. They were led by an agent who had been studying the operations of the base for several weeks. That the day was too warm for activity was irrelevant to these men, for they plotted activity of the most violent kind. As the agents knew, the apparent lassitude that seemed to pervade the base was deceptive. The people there were ready to launch within 15 minutes most of the sleek B-52s that lined the ramps in a state of constant readiness. This readiness, and that of other SAC aircraft at bases throughout the world, plus America's ready missile force, and its defensive and tactical weapon systems, were the primary reasons why the five men and others like them were about their subversive business this day.

If the enemy could keep these forces from reacting—from getting off the ground and on their way to targets—for 15 minutes, he could destroy them where they sat. Today the attack would come. Today these five men would infiltrate that quiet base and attempt to keep those deadly B-52s from getting airborne.

Their plan was well formulated. They would exploit the ordinary. At 5 p.m. local time, the assault on the Free World would be launched. Within 90 seconds the warning and alerting facilities of the North American continent would galvanize this quiet base and the entire nation into action. Thirteen and a half minutes later, the B-52s would be enroute to their targets.

It was 4:30. A smartly dressed Air Policeman waved an ice cream vending truck through the main gate as he had done every day at the same time for the last several months. Near the flight line entrance gate another AP watched a truck from Air Installations stop nearby. A man got out and put up a "Restricted Area" sign. He moved to the gate, flashed a pass and started through.

A short distance from the base, a two-star general got out of a staff car with his aide and approached an Air Policeman guarding the entrance to an area in

BORE THE BELL

As he maintains the tranquility of his base the Air Policeman knows he may be the first to meet the enemy.

which were stored deadly nuclear weapons. The AP snapped to attention, saluted.

At 4:45 the airmen in the base Central Security Control center got a terse report over their radio. It was the AP at the flight line.

"Holding alleged installations man with a suspicious pass. Also, the regular ice cream truck went through the gate without stopping."

The sergeant at Security Control immediately dispatched four men; two to check the installations man, two—in an armed vehicle—to intercept the ice cream truck. Minutes later the AP at the bomb storage area called.

"A general officer without proper credentials wants access to the dump to inspect safety measures. Am detaining him." Two more men were dispatched.

Another report, this from the vehicle dispatched to the ramp. "Ice cream truck deliberately evaded interception and is proceeding rapidly toward the alert aircraft area."

The sergeant in Security Control started pushing buttons. The Director of Security and Law Enforcement (a new title replacing that of Provost Marshal) and the wing commander were notified. Sirens screamed an alert throughout the base. It was no longer quiet.

At 5 o'clock the pseudo installations man and the bogus general and his aide were in custody. The ice cream truck driver lay dead beside the explosives and weapons that bore little resemblance to frozen confectionaries. The head agent had fled to anonymity, amazed at the degree of his failure. At two minutes after five the world-wide alert came through. By 5:15, the bombers were on their way.

That One Moment

This story hasn't happened yet, but it isn't fiction. If an attack should ever come, attempts to sabotage our alert forces are a virtual certainty. And it is equally certain that these attempts will fail. The base Director of Security and Law Enforcement and his complement of trained, dedicated men will see to it. Day and night, through every monotonous minute of every dragging hour, the Air Policemen must remain suspicious of the myriad, ordinary activities that go on around him while he is on his post. If he relaxes for one moment, it could be that *one* moment from which there is no future.

This interminable posture of alertness combined with monotony is the heart of an Air Policeman's existence —an existence keyed by a task that today is as different from the one he faced 10 years ago as the F-104 is from the F-80. It is not only different, it is bigger and far more vital to national security. No longer are Air Policemen concerned primarily with the enforcement of base laws. This part of their job, though still important, comprises only about 25 percent of their total efforts. The other 75 percent involves the maintenance of security at vital installations so that our weapon

systems cannot be sabotaged before they even get into action.

This allocation of Provost Marshal and Air Police responsibility is a complete reversal of what it was just 10 years ago. As in most Air Force activities, advancing technologies and weapon systems have engendered changes in strategy and concepts to the degree that little similarity exists between today's operations and those at the beginning of the last decade.

As far as the functions of the Air Police are concerned, the evolutionary process has been gradual and in most cases so subtle that many people in the Air Force are barely aware that a change has taken place.

A Base, Then and Now

Take a look at a hypothetical base as it existed at the outbreak of the Korean conflict. It had about 3,000 people, 65 tactical aircraft and covered roughly 3,700 acres of land. The AP force consisted of 90 airmen, 3 officers, 4 vehicles, the inevitable stockade, and AP headquarters.

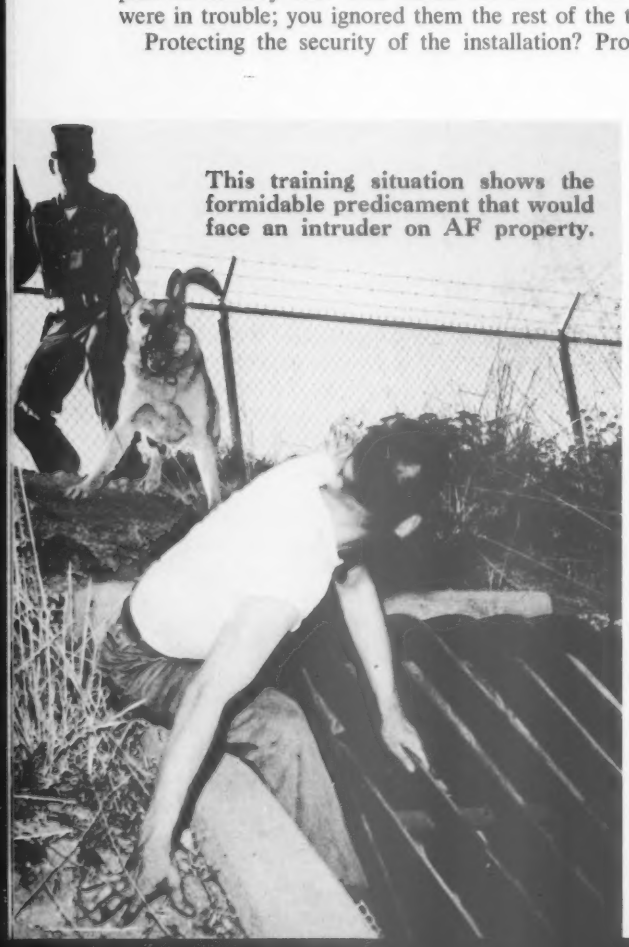
This force of Air Policemen then devoted 75 percent of its time and effort to law enforcement. To most of the 1950 Air Force, the sight of the AP directing traffic, giving tickets or warnings, standing "watchman" type guard through the night, supervising prisoners on work details, checking and issuing passes, registering cars, and patrolling the streets of the town were typical, characteristic sights, taken as a necessary part of military life. You called on them when you were in trouble; you ignored them the rest of the time.

Protecting the security of the installation? Protecting it from what? In 1950 the enemy did not have the capability of reaching this country with its weapons in a matter of minutes. Our war deterrent therefore was not dependent upon our ability to react in 15 minutes. Sabotage was a remote problem in the United States, not much more acute overseas. To engage an enemy, the Air Force still needed forward bases to which the aircraft would be flown from the ZI. Forward bases themselves were generally far enough behind the lines to be well protected. Security was important, yes, but hardly vital. In 1950 there was still *time*.

Look at the same base today—the base the enemy would give his right arm to put out of commission during the first stages of attack. It still occupies 3,700 acres, but its population has tripled to 9,000 people. The number of combat aircraft has nearly doubled to 120. There is family housing—a full community which relies on the Provost Marshal and his force for protection and assistance. There are more automobiles with the resulting increase of traffic, registration, congested roads, and a critical need for safety programs.

But most important, this base no longer has the time to move its force leisurely to a combat zone. It is *in* a combat zone. It is keyed to react to an attack in minutes.

On this base today, 350 airmen and 7 officers form the Air Police force. They have about 15 vehicles, including those assigned to sabotage alert crews. They have a Central Security Control manned 24 hours a day and keyed to respond as rapidly and effectively as a combat operations center. They have dogs, lights, fences, radios, alarms—the full gamut of existing devices to insure that security is airtight and infallible.



This training situation shows the formidable predicament that would face an intruder on AF property.

Enforcing the Law

Although law enforcement takes only one fourth of the time and people, the job itself is obviously larger than it was in 1950. Its character, duties, and the designation of many of the functions have changed.

Policing and the base stockade have undergone more than a name change. These functions are now called confinement and rehabilitation with the accent on rehabilitation. For the amazing drop in offenses and confinement rates which precipitated the change in this area the Air Police readily acknowledge the predominant part played by the squadron commander and the calibre of Air Force personnel. In 1953 for example, 5.73 airmen out of every thousand were confined. In 1959 this had dropped to 2.16 and trends for 1960 indicate a further substantial drop to an insignificant figure.

Expansion of base populations on the other hand have resulted in an upsurge of traffic that must be regulated and supervised. This has added a burden because only trained men can effectively direct great volumes of traffic. Besides, traffic flow patterns must be determined and established, demanding a knowledge of the latest techniques and aids available. The problem is almost identical to that of a small com-

This young miss looks to the friendly AP for help.

munity of a comparable population, but it is compounded in many cases by inadequate roads, parking areas, and egresses to main arteries off-base.

Pass and registration activities have also increased phenomenally. The Director of Security has altered a portion of this activity to include visitor processing, with streamlined procedures minus red tape. In consonance with Air Force policy, he encourages visitors and does everything possible within the bounds of security to make visits pleasant and painless. One big factor has been the "bottling up" of sensitive areas on a base, which keeps unauthorized personnel out of restricted zones, but allows visitors more liberal access to most other base areas.

At one base last year, 5,000 restricted area badges were issued to authorized personnel, and 20,000 visitors were processed on to the base. Commissary cards, registry activities and identification cards for active-duty personnel and their dependents are other activities that have increased because of the jump in base population.

Air Police conduct only minor investigations these days, coordinating with the Office of Special Investigations (OSI) which accomplishes most of the tremendous investigative workload. (See *Case of the Curious Career Field,* June 1959 issue, THE AIRMAN.) These investigations are an essential prelude to the effectiveness of the on-base security program. By insuring that only people of proven loyalty have access to restricted areas vulnerable to sabotage, espionage and subversion are minimized.

The archaic "Town Patrol" is practically nonexistent. Today the Director of Security and Law Enforcement relies on liaison with civilian authorities and sound community relations to meet the now minor problem of errant Air Force people in the local town.

To add a somewhat incongruent note to the Air Policeman's activities he is also charged with the responsibility of conducting the Fish and Wildlife Conservation Program which was established in 1956. (See *Woods, Waters, and Wisdom,* April 1960 issue, THE AIRMAN.)

SECURITY—*Key to Survival*

What did base security really mean in 1950? Mainly it meant elimination of pilferage—the safety of supplies and equipment, guarding the payroll, watching for compromised information through administrative security leaks, and checking the background of individuals. Security then meant guarding flyaway kits, POL storage areas, war rooms, wing intelligence, and conventional ammunition. Today these things are still done but to a greater extent.

Today the big job in security is the safeguarding of weapon systems. The five agents who sought to cripple the B-52s in the opening illustration are an example of the resources applied to this critical function.

Four main events are responsible for the security program as it exists today. One was the Korean Conflict, which pointed up the need for standardization of Provost Marshal activities in the security field. Second was the bombs-on-base program, or nuclear weapons storage facilities, which began about 1954, because nuclear bombs, in accordance with operational requirements, must be within easy access of the aircraft and missiles that deliver them. The third event was the establishment of the alert aircraft system for reflex action in the event of an attack, and fourth was the program to disperse these aircraft and thus reduce their vulnerability to ICBM or manned bomber attack.

The prototype of today's security organization was actually developed during the Korean Conflict when rapid troop build-up resulted in an explosive expansion of Air Police forces. These men were generally untrained, and a hodge-podge of security systems sprung into being both overseas and in the ZI. The problems were many and fairly obvious—standardization was necessary, particularly in Korea where the sabotage threat was very real. The influx of Air Force personnel meant more security clearances, education of these people as to their responsibilities for security and assignment of priorities to security activities which varied greatly in their degree of vulnerability and importance to the enemy. There was a need for circulation control —insuring the right people got into the right areas— and a need for an alert response system and tighter security measures. Physical security aids were needed; particularly the refinements in electronics which meant better radios, lighting systems and alarms.

As time progressed, and nuclear weapons were stored on bases in the ZI and overseas, another problem and its solution evolved. Prerequisite to on-base storage of nuclear weapons was an AEC requirement that the Air Force provide the same degree of security afforded at their storage areas—a job that fell to the Provost Marshal and one that was and is handled effectively as an integral part of his security program.

In 1957 the alert aircraft program had a sudden im-

Even at the ends of the earth, vigilance is unceasing.

pact on the security job of the Air Police. It provided the ultimate sabotage target, and created a new, unique problem of "using organization" security.

There was more to protect than just the carrier, i.e., the aircraft itself. All supporting elements fell under the scrutiny of security forces as well. With such complex weapon systems, the sabotage of a support function or piece of equipment would be as effective in scratching one weapon as the sabotage of the weapon itself. The probability of enemy agents or mentally disturbed individuals with the necessary technical knowledge gaining access to a nuclear weapon storage area or an alert aircraft area and detonating a bomb is exceedingly remote. Still, it is a possibility to be guarded against. A series of checks and double-checks are in effect, therefore, which make such an occurrence a virtual impossibility.

With aircraft dispersal, the problem of several different weapon systems at one base which is also populated with diversified commands or activities added another complicating factor to security. It also placed the Director of Security and Law Enforcement in the position of serving two or more masters—the base commander, and the commanders of the combat units on the base.

Missiles, Men and Manufacturers

At some bases in the United States operational ICBMs stand ready to fire. At others silos and installations are still under construction. At these top security bases civilians work side by side with Air Force personnel in areas where one enemy agent could wreak havoc with the delicate controls of guided missiles. At the same time, thousands of industrial firms employ hundreds of thousands of people making intricate parts for missiles and other weapons. Security in these activities can be as important as security on any Air Force base. This is why the Director of Security and Law Enforcement has an Industrial Security Program. Essentially, the job of the people here is to be assured that the contractors themselves have adequate programs for protecting classified defense information. It is a tribute to American industry that it has taken ready cognizance of the security problem, the sensitivity of their job, and the importance of adequate security measures to the defense of the nation. Today there are approximately 8,200 cleared facilities affiliated with the Air Force and employing about one and a half million people. Each year roughly 1,500 facilities and 125,000 people are added to the "cleared" category.

The People

Some things never change. The biting winter wind cutting across a frozen ramp at midnight; the cold, boring, endless hours of pacing through an area waiting for something to happen, hoping it never will. An Air Policeman's lot is not an easy one—it never has been and never will be. These things never change.

Where do you get men who willingly stand guard mounts, fight boredom in every conceivable kind of weather, parade like a crack drill team, muster the courage to detain a general officer, be suspicious of an ice cream truck?

Brig. Gen. Robert F. Burnham, Director of Security and Law Enforcement of the Air Force, whose Washington, D. C., office governs and standardizes these functions Air Force-wide, says this is one of his biggest problems.

"You can have the best systems and equipment, the best training in the world, but in the final analysis you rest your case on the solitary, lonely man who might give the first warning that a sabotage attempt is underway."

At Lackland AFB, the Air Police school turns out such men. They are trained in all phases of security and law enforcement. About 39 percent of the APs today are graduates of this school. General Burnham is looking forward to the day when the figure is greatly increased.

"A director of security and law enforcement and his men are more than policemen," he said. "To be good, really good at their jobs they must combine the qualities of a diplomat with the alert perceptiveness of a fighter pilot. They must fight down ennui, and must be prepared at every instant to transform passive observance into decisive action. This takes more than training. It takes the highest kind of intense dedication."

The profile of today's security and law enforcement director embodies a span of professional activities unprecedented by past generations. He is a criminologist, investigator, planner, command coordinator, traffic engineer, security expert, conservation officer, community relations specialist, staff officer, and squadron commander.

Admittedly, this takes a rare kind of bird. But any dependent who has ever called an Air Policeman to find a missing child; any airman who ever needed immediate help out of a tight spot; any commander who ever had a problem with protecting an important area; any visitor who was met at a base entrance with a cheery smile and a friendly wave of a white-gloved hand—all will tell you the Air Policeman, the man who may get into the fight before the bell, meets these qualifications.

Glimpses of History

by TSgt. John K. O'Doherty, *Airman Staff*

Of all military concepts that have been remolded in the crucible of experience, the function and position of the Provost Marshal has probably been altered as drastically as any. The progress of military history has transformed Provost Marshal activity from the status of a simple regulatory function to that of an essential integral component of overall combat capability.

As a result, the title Provost Marshal, adopted in America in 1776, was dropped from Air Force usage last month, joining in limbo a long list of terminology antiquated by the nuclear age. Henceforth, the man formerly called Provost Mashal will be known as Director of Security and Law Enforcement.

The role of the Provost can be traced back to the earliest years of modern military history. In the days of chivalry—when Knighthood was in Flower—the Provost rode ahead of his noble lord, serving as a combination bodyguard and early-warning system against ambush in the forest. During periods when the lord was not at war with his noble neighbors, the Provost was assigned the additional duty of collecting tribute—in the form of cattle or crops—from peasants living on the lord's domain. This function led—not unnaturally—to a further additional duty as keeper of the castle dungeon where recalcitrant or unproductive peasants were lodged until they learned a lesson.

From this point it followed logically for the Provost to assume the familiar function of military police work when modern organized armies came into being after the decline of feudalism.

In January of 1776 General George Washington appointed a Provost "Martial"—as he was called at the time—to serve the Army of the United Colonies. Shortly thereafter the Congress authorized the creation of a Provost Corps "to be mounted on horseback and armed and accoutred as Light Dragoons." The Marechausie Corps, another free-wheeling, uninhibited, and highly mobile component, was directed to "apprehend Deserters, Marauders, Drunkards, Rioters, and Stragglers," as well as to perform various other military police duties. Along with most of the rest of the Army, these colorful units and the post of Provost Martial disappeared soon after the Revolutionary War.

In September 1862 a Provost Marshal General was appointed for the duration of the Civil War. The primary function of the office was administration of the military draft laws, but subordinates of the Provost Marshal General throughout the country were charged with apprehending deserters, arresting disloyal persons, investigation of individuals suspected of treason, detection of spies, and recovery of stolen government property. The police function of the Provost Marshal at that time covered an area of considerable breadth and responsibility, and embraced many of the duties now associated with civil police organizations.

The office of the Provost Marshal was again resurrected during World War I, once more with the primary function of enforcing the Selective Service Laws. Overseas. General John J. Pershing appointed a Provost Marshal AEF to advise him on military police matters, and a Military Police Corps was activated in France. At the end of the war, the Corps and the office of Provost Marshal were again dissolved.

Just before Pearl Harbor in 1941, when the country was preparing for the inevitable, the Provost Marshal General's Office and the Military Police Corps were once more established. In addition to routine military police duties, responsibilities were expanded during the war to include criminal investigation, interrogation and processing of prisoners of war, and the physical security of camps, posts and stations.

When the Air Force attained autonomy as a separate service in 1947, the basic Provost Marshal police system was retained and designated a component function of the Inspector General. Even during the war the concept of the military police function as defined by the Army for the support of ground forces had begun to show incompatibility with airpower requirements.

As the Air Force, accordingly, proceeded with the development of its own characteristics—and as the military personality of the airpower structure vividly appeared as a separate entity—a parallel process was applied to the Provost Marshal air police system. As a result, the configuration of the present-day structure bears no more resemblance to General Pershing's military police corps than it does to General Washington's mounted dragoons.

RUNAWAY PROP

This episode is now but a fragment of history and MATS Crews have moved ahead into speedier jet-prop aircraft. But this incident in a C-97 illustrates the flying proficiency that characterizes the men who fly the nation's strategic airlift force.

by Al Dougherty, *Scott AFB, Ill.*

WHEN HE NOTICED OMINOUS OIL STREAMERS on the two left engines, Maj. Samuel W. Tyson turned back to Travis AFB, Calif., and transferred his 57 passengers to another C-97 aircraft.

Airborne again on the 2,250 nautical-mile flight to Honolulu, the crew joked about their slow progress. They could afford to joke. They knew Major Tyson. He was an experienced MATS pilot. He could be trusted to handle any in-flight emergency.

The flight from California to Hawaii would take about nine hours, all over water. The night was clear and perfect for flying. Four and a half hours passed uneventfully. Major Tyson radioed Hickam at Honolulu and obtained permission to climb to 16,000 feet to take advantage of tail winds.

He increased power, raised the nose in a shallow climb, and signaled the copilot, Lt. Gene Lambert, to take the controls. It was the major's first relief since takeoff. At 16,000 feet Lieutenant Lambert leveled off. Major Tyson took off his headset and started to get out of his seat.

Banshee Prop

A loud screeching whine froze him to his seat. It meant only one thing—a runaway prop.

Next to fire, a pilot fears most a runaway prop. A propeller that starts racing beyond its mechanism's control is a dangerous thing. It could fly off, rip into the fuselage, rupturing vital electrical wires and control cables. It could rip the engine from its mounting. Turning far in excess of its normal speed, it acts as a wall of metal thrusting against the air, causing the aircraft to yaw sharply.

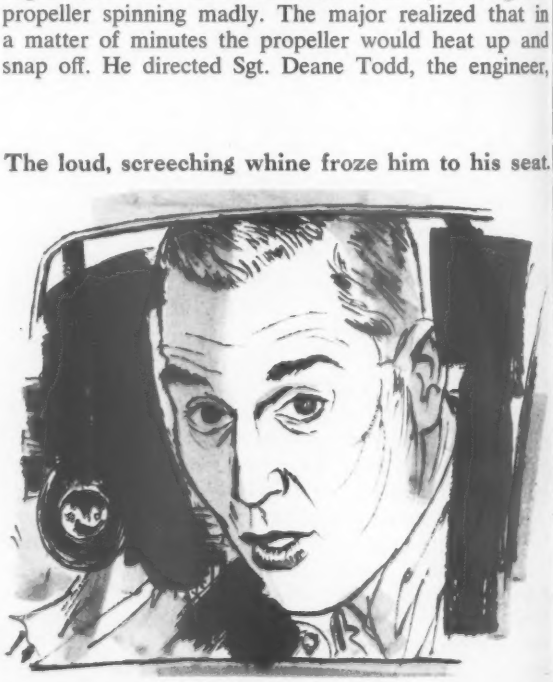
Frantically Major Tyson tried to feather the prop. It kept racing. Reducing speed, he descended, hoping the heavier air would act as a brake on the banshee prop. Again he slammed the feathering switch. Still nothing happened. The high-speed revolutions had drained the mechanism of the oil necessary for feathering.

The situation was perilous. He broadcast the international distress signal "MAYDAY" giving the position of the aircraft and announcing he had a runaway prop. The passengers were alerted to the possibility of a ditching.

☆ ☆ ☆

Things began to happen. Without lubrication, the engine froze and the drive shaft sheared, leaving the propeller spinning madly. The major realized that in a matter of minutes the propeller would heat up and snap off. He directed Sgt. Deane Todd, the engineer,

The loud, screeching whine froze him to his seat.



to watch the hub and let him know when it glowed red hot. It was Major Tyson's intention to tilt the left wing high at the precise time so that the flying prop would clear the plane.

The crew and 57 passengers were tense. Speaking in a level voice over the public address system, the major told them: "We are about to throw a prop. Everything will soon be normal." Sergeant Todd's reports were short and crisp: "Nose section getting red hot . . . sparks coming from the nose section."

Fiery Juggernaut

Through the window Major Tyson could see a magnesium fire starting in the nose section. He turned the wheel to the right and kicked hard on the rudder pedal, tilting the left wing as high as possible. The propeller broke off, trailing flashing sparks; it clipped a blade from the idled No. 2 engine and soared past the fuselage.

There was no time to relax. Sergeant Todd reported: "Fire still burning in the engine nose section." The plane was heavy with gasoline.

"Prepare to ditch!" ordered Major Tyson. The crew was already at ditching stations.

During descent, on the long chance that more speed might blow out the fire, he told Lieutenant Lambert to "rev up" the engines. Because of its clipped blade, engine No. 2 vibrated dangerously. The engine was shut down and feathered. But the C-97 gained speed. Moments later Sergeant Todd reported "Fire's out."

Hard Decision

With the immediate crisis over, Major Tyson was now faced with a hard decision—whether to head back for a bypassed Coast Guard weather ship and ditch, or try for Hawaii on two engines. He called on all the knowledge and experience of his 6,000 flying hours. By shifting his destination from Honolulu to Hilo, Hawaii, he could reduce the flying distance to 1,000 miles.

He calculated that the gas supply, flying on two engines, would leave him about 20 minutes short. He also knew that no one had ever flown a four-engine C-97 1,000 miles on two engines.

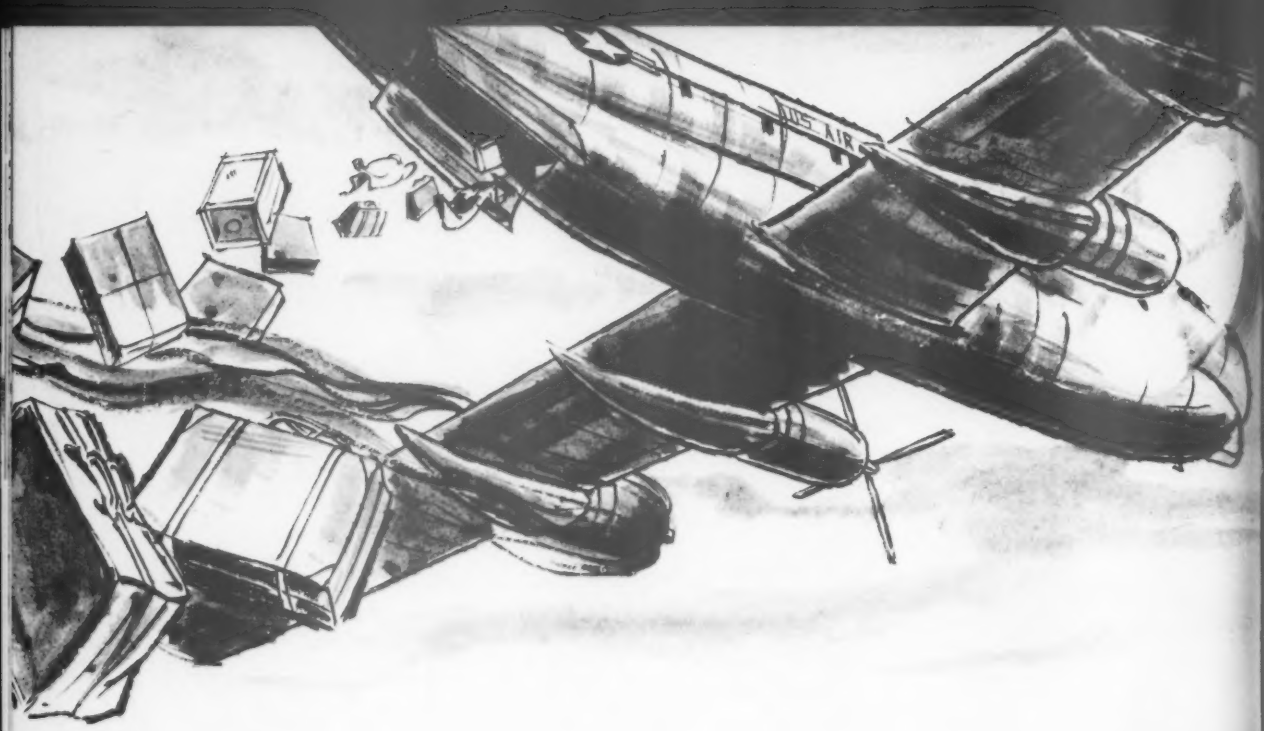
A MATS pilot learns many things about the sun, the moon, the stars, the waves. To Major Tyson's concentrated thinking came a little fact of aerodynamics: if you could fly a propeller-driven aircraft very low, almost on the wave tops, the "ground effect" would give the plane extra lift which would reduce fuel consumption.

After weighing the facts he decided to try for Hawaii; if necessary, he could turn back at the halfway mark. In any event, if one of the remaining engines showed signs of failure, he would be forced to ditch in the open sea.

Major Tyson informed the airways of his decision to proceed on two engines to Hawaii. He learned that two MATS Air Rescue Service SC-54s equipped with life rafts and rescue supplies had taken off from Hawaii. Ships were standing by along the route. A MATS C-97 that had left Travis an hour before him had turned back to fly escort.

Major Tyson ordered the crew to jettison the 5,500 pounds of baggage and cargo. When this was done the plane was moving sluggishly only 50 feet above the waves. Maximum power was applied and the craft leveled off at 100 feet.

They inched the plane up and down, over the swell of the waves. Pilot and copilot periodically relieved each other. The strain on each man was terrific. During the ordeal, Lieutenant Lambert was soaked in perspiration. Major Tyson described the pull of the control column on his arms as "tremendous."



At the halfway mark this grueling flying had won them a margin of 45 minutes over the estimated fuel reserve. It was daylight. With engines laboring, the C-97 flew on at 163 m.p.h., skimming over the waves. The escort C-97 had located them and flew as navigator, 1,000 feet overhead. The two Rescue SC-54s appeared.

Go-Around

As they neared Hilo, pilots and engines were in the last stages of exhaustion. Under maximum power the C-97 began a slow climb to 500 feet. Major Tyson checked maps to line up for a straight-in landing. With the runway in view he descended to 300 feet and shouted "Gear Down."

It was a tense moment for the crew. The gear was housed beneath the engine that had been nicked by the flying propeller. There was a good possibility it was jammed. And fate took one last jab at the belabored crew.

The light for the left landing gear glowed red. The gear was not down and locked. A sergeant called out: "There's enough gas left for a go-around."

"Not a chance," thought Major Tyson, "you don't go around in a C-97 on two engines. Still, we've just flown 1,000 miles on two engines, and who would believe that?"

The plane was down to 250 feet. He called to the copilot for flaps up and full throttle while he leveled out for a "go-around." Meanwhile two sergeants worked frantically to crank the left gear down by hand.

The left gear was down when the plane completed the circle. Major Tyson lowered the right nose landing gear and began another approach.

The C-97 touched down a bit fast, rolled 6,000 feet, and taxied in to the roar of a spontaneous cheer from the 57 passengers.

☆ ☆ ☆

This is the kind of flying that has won MATS renown throughout the world. The MATS flying safety record has set a high standard within the Air Force.

The proficiency and initiative of Maj. Samuel W. Tyson are characteristic of MATS pilots—the men who fly with the nation's strategic airlift force.

A spontaneous cheer rose from the passengers as the aircraft taxied to a stop after their grim experience

PACIFIC PARTNERSHIP

International air-defense team unites to insure that the price of aggression is kept at a prohibitive high.

by SSgt. Irvin H. Lee
Hq. Pacific Air Forces

THERE ARE DOZENS OF 50-foot diameter rubberized spheres atop buildings scattered over the Pacific/Far East. Inside these balls are the familiar rotating antennas which are the heart of the Pacific/International air-defense system.

Like the second hand on a watch they smoothly and silently revolve, 24 hours a day, 365 days a year.

Beneath these spheres are the men on duty at the consoles, scanning the screens for the tell-tale blips which would mobilize any one or all of five nations and send interceptors screaming to the attack.

The men at the consoles and the pilots who fly the aircraft, the people who maintain and support them, are of many ancestral backgrounds. They are Americans and Japanese, South Koreans, Filipinos—all integral to the defense system that could perhaps be the first major organization of the Pacific Command to meet any aggressor attempting to forcibly penetrate the air corridors bordering Japan, South Korea, Okinawa, the Philippines or the western United States. Together, these nations form a cartel that makes the price of aggression prohibitive.

Clearly, air defense is not divisible into independent segments. The air defense of the Pacific/Far East must be and is, a closely coordinated effort. It consists of continuous early warning networks provided by all countries, and supported by automatic reporting and presentation devices. Its unity of purpose, command, and facilities makes it a highly efficient international aircraft and weapons control system.

To Detect and Alert

Indicative of this defensive cooperation is the detection and interception system being used by American and Japanese air forces throughout Japan. Here airmen of the U. S. Fifth Air Force and the Japan Air Self Defense Force (JASDF) work side by side to guard Japan's sovereign airspace.

Focal point for the air defense of Japan is at Fuchu Air Station near Tokyo. In a closely guarded room at Fifth Air Force Headquarters, Lt. Gen. Robert W. Burns, Commander of the Fifth, and Lt. Gen. Misoo Matsumae, JASDF Commander, have a perpetual up-to-the-minute picture of air operations. In the event of enemy aggression, they can direct far flung air battles from this command post.

The USAF/JASDF air-defense system is fully integrated. From the country's highest radar site on the island of Sado Shima to intermediate control centers, and the farthest fighter-interceptor squadron, Japanese and American controllers, commanders and fighter pilots share joint responsibility in planning, coordinating and carrying out their missions.

Even the language barrier has been eliminated under

Japan's Lt. Gen. Misoo Matsumae with USAF's Lt. Gen. R. W. Burns.

this integrated system. Through a rigid training program JASDF airmen learn to speak English for the purpose of controlling aircraft.

Okinawa

The air-defense system on Okinawa is organized similar to its North American cousin, the Continental Air Defense Command. U. S. Army, Navy, and Air Force personnel make up this integrated establishment.

Nerve center of the Okinawa Air Defense System is at Naha Air Base. Here, Air Force and Army personnel keep a 24-hour vigil of "tracks" being plotted from reports sent by far-flung radar sites, from the Navy's airborne radar aircraft, and from picket ships.

Should an unknown aircraft's blip appear on the radar scope of one of the system's radar, the controller presses an alarm which summons the pilots and their F-102s into action.

Simultaneously the controller turns to his Army counterpart and tells him to alert the *Nike* missile sites which are strategically located on the island. As the F-102s roar down the runway, the *Nikes* point their deadly warheads toward the skies, and stand by to deliver the knockout punch should the unknown be hostile and slip by the interceptors.

Miles above the green fields of the Philippines, one can see two jet fighters streaking across the skies as though they were two species of birds just getting acquainted.

These planes represent the F-86s of the Philippine Air Force and the F-102s of the U. S. Air Force. They are participating in PAF-USAF Patrol—a joint surveillance mission being performed frequently by the two services to guard against a sneak air attack.

On the ground, in darkened operations centers at the island's numerous radar sites and in the Control Center at Clark Air Base near Manila, Filipinos and Americans work around the clock monitoring reports and tracks relative to air activity in the islands.

On Taiwan, the Chinese Air Force provides its own air defense. Their communications system, however, is linked with Okinawa and the Philippines.

General Tipton and his integrated battle staff are

F-86Ds of Japanese Air Self Defense Force fly patrol over snow-covered slopes of Mount Fuji.

Republic of Korea pilots scramble for their F-86Fs at Suwon Air Base.

Plotting aircraft tracks in a darkened intercept center, AIC H. D. Pierce, USAF, and Cpl. Felipe Abayar of Philippine Air Force.

Hawaii Air National Guard flying swift F-102 Delta Daggers provides 24-hour air defense for the area surrounding the 50th State.

constantly faced with the realization that their closest enemy is only seven flying minutes from key military installations in the Republic. With this fact in mind, reaction time is of utmost importance should the enemy decide to strike.

In Korea

In Korea, where not too many years ago PacAF —then known as Far East Air Forces (FEAF)—units were actively engaged in defending the homeland of an ally, the air defense system is also integrated.

The man responsible for defending South Korea against air attack is Brig. Gen. James B. Tipton, commander of the 314th Air Division, headquartered at Osan Air Base. All military forces designated or available for air defense have been placed under his operational control. This force is composed of personnel of the Air Force, Army, and the Republic of Korea air force and army.

The purpose of air defense is to detect, identify, intercept, and destroy a hostile invader as far from his target as possible, and to subject those who escape forward defenses to run a gauntlet of increasing countering forces.

For this reason a vast inventory of American and Korean defensive firepower is available: surface-to-air missiles, subsonic and supersonic jet interceptors carrying a lethal array of rockets and missiles, and ROK antiaircraft artillery. An actual situation would probably involve a mixture of all these weapons with thousands of Americans and Koreans continuing the action until the battle is won.

And Closer to Home

Hawaii is not only important as far as the defense of our homeland is concerned, but it is a major link in a Pacific defense chain. Alert and ready to prevent another Pearl Harbor is the Hawaii Air National Guard, officially rated in Washington and by the Pacific Air Forces to be one of the most efficient Air Guard units in the United States.

The 20th Century Minutemen of Hawaii, made up of individuals of more than eight ancestral extractions, provide the only active, 24-hour air defense of the 50th state.

The Guard's F-102-equipped 199th Fighter-Interceptor Squadron, and two aircraft control and warning squadrons, work as a team not only to provide the active air defense for the Hawaiian area, but also to conduct the air battle far from islands and mainland shores.

In their air defense mission, the Hawaii Air Guard works closely with the Air Force-operated Air Defense Control Center of the Hawaiian Air Defense Division.

With the formation of an integrated Pacific air defense system, the peoples of the Pacific/Far East and the United States have pledged their partnership in the defense of Free World ideals.

In the words of Gen. Emmett O'Donnell, Jr., PacAF commander in chief: "This defense raises the price of aggression. If our enemy knows that her attacking aircraft must fight their way to their targets, she will be less likely to strike the blow."

TORNADO TRACKERS

by Dave Karten, *Airman Staff*

ON THE MORNING OF MAY 19, 1960, CWO George Coulter, a forecaster at the Air Force Severe Weather Warning Center in Kansas City, Mo., relieved the night man, Capt. Millard Page at 0600.

Coulter lit his pipe and began routinely checking the latest reports. They read: "Scattered showers from the Eastern Plains States to the Ohio Valley and the lake region, and over the northern portion of the Gulf States. Cooler weather from the Northern Plains States to the southern Rockies."

But a warming trend was forecast over the Rockies and the Southwest. The reports said low pressure would prevail over the upper Mississippi Valley with a trough moving southwest into Texas, and another moving southeast to North Carolina. Scattered showers and thunderstorms were predicted from the Mississippi eastward to the Appalachians and southward through Virginia, the South Atlantic Coast into the Gulf Coast, and over the Northwest. The report said it would continue warm over the Atlantic and the Rockies."

A look at the surface weather chart alerted Coulter to the possibility of a tornado threat later in the day. A narrow band of moisture was over Kansas. Dry air was coming over the southwest in the middle level. It indicated the possibility of tornadoes somewhere over a broad area.

Warrant Officer Coulter next turned to the charts showing the upper air currents. On the 850-millibar chart, which shows wind, temperature, and moisture conditions approximately 5,000 feet above the surface, there were several important features which spelled danger.

The chart showed there was a tornado-triggering mechanism in the upper cold front moving eastward out of Colorado and New Mexico which would reach the area of eastern Kansas and Oklahoma by late afternoon.

Now Coulter examined the chart for the 500-millibar level which represents conditions at about 18,000 feet above the surface. Here he also noted conditions that could contribute to the tornado-forming possibilities on the other charts.

His next step was to combine on one chart the forecast conditions for the 850-millibar and the 500-millibar levels. This also confirmed his suspicion that an area centered in Kansas would be part of the vicinity where tornadoes were likely that afternoon.

After analyzing charts showing temperatures, moisture, and winds at 5,000, 10,000, and 20,000 feet above sea level, he studied surface charts of the ground conditions hourly, kept a close check of the movements of the cold and warm air masses, and watched for the development of squall lines. He checked upper air stability by studying the radiosonde runs—the upper-air soundings which are made at more than 75 observation sites in the U. S. by rawinsonde transmitters attached to balloons. They showed him the temperature, pressure, and moisture content of the air from the surface to more than 30,000 feet above sea level. Close examination of the upper air soundings indicated

that the instability would be increased as the low-level warm moist air continued to move northward over eastern Oklahoma and eastern Kansas. By combining all these facts it became apparent to Coulter that all of these conditions would merge over eastern Kansas and center in the Topeka area.

Re-examining these and other supplementary charts, Warrant Officer Coulter was satisfied there was a tornado in the making. His next step: to send the location of the danger area in code over the Air Force weather teletype network to all installations.

Coulter wanted to keep the forecast area as small as possible and yet include the places where the tornado might occur. He wanted to avoid alarming people unnecessarily and yet alert those in the danger area.

He drew up a "tornado box" showing where the squall lines would most likely produce tornadoes. At 1330 hours he sent out a severe weather advisory warning that tornado activity would begin at 1800 central standard time over eastern Kansas. Somewat later the Weather Bureau issued a similar forecast to the public.

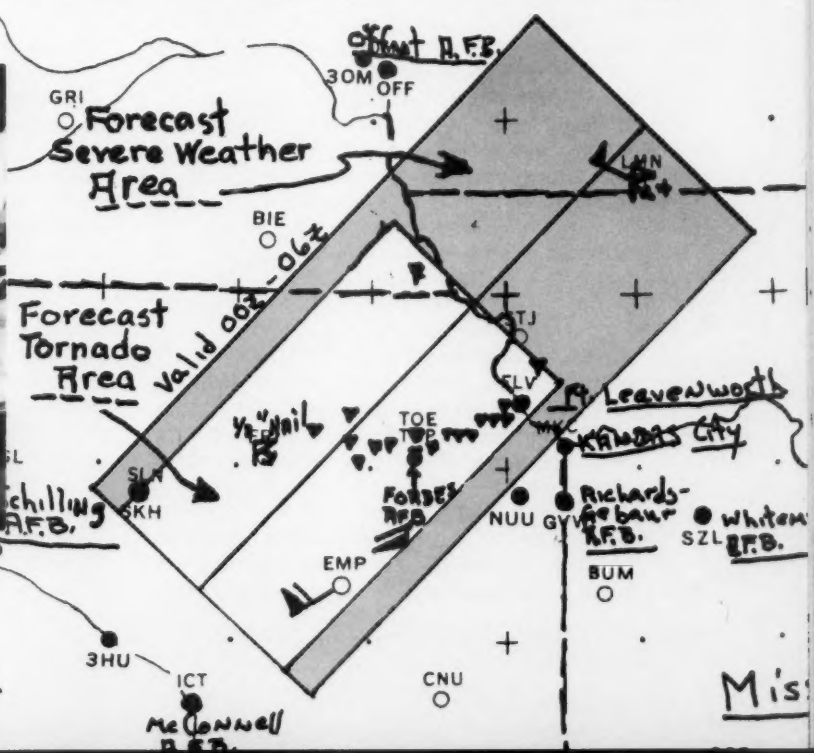
At 1750 the tornado struck. Thundering in from the southwest, roaring and twisting it rolled across Kansas. Within the next hour five other tornadoes hit the area. They cut an 80-mile path, skip-bombed havoc as they went. The last of these was like a giant elephant's trunk dangling from the sky. A whirling funnel of fury dropped from the boiling cloud base and ripped across the Leavenworth city limits; moved along to resume its destruction across Missouri. With the roar of a thundering locomotive, the snarling twister sped eastward.

Collapsed buildings hurtled through the air in a churning jumble of deadly debris as the twisters battered everything in their path. They dropped at random like a cleaver in some areas, spewing rubble in great heaps.

The first tornado terminated about three miles north of Rossville, Kans. Its movement was principally east northeast. The second twister struck four miles northeast of Rossville and three miles southeast of the point where the first terminated. Its path was only slightly north of due east. East of Meriden, near Ozawkie, Kans., two damage paths extended for about five miles. The southern path extended east through the northern part of Oskaloosa ending about two miles northeast of McClouth. Tornado number four originated about two miles north of the third's terminal point, passing almost due east past Springdale where it lifted and returned to the ground four miles west of Leavenworth. A fifth twister touched down in north Topeka on Highway 24 about a half mile east of the junction with Highway 75. Another tornado struck two miles north of Highway 24, a mile and a half west of Highway 75.

A Kansas farmer described the main storm as a "rolling mass of black cloud." A dreadful roar was reported the length of the tornado path. Trees, fences, transmission lines, buildings, machinery were all leveled or battered. The Red Cross reported 110 dwellings destroyed and 350 damaged. Nine school and business buildings were reduced to rubble. Trees on the north and south edges were all turned inward along the

CWO George Coulter, who learned his tornado forecasting under Fawbush and Miller, draws up a "tornado box" showing where twisters will most likely develop in thunderstorm forecast area. His accurate forecast and advance warnings were credited with saving many lives when tornadoes struck near Leavenworth last May.



Mobile rawinsonde teams use a fleet of trucks to cover Tornado Alley. They annually begin their check in a rough triangle stretching over nine bases in the Texas-Tennessee-Georgia area in mid-February, gradually work their way up north, cover South Dakota-Indiana-Missouri in early summer.

tornado path. Debris showed a definite center line over much of the unusually wide path. Rubble was carried miles to the north. The town of Meriden, Kans., was virtually demolished.

Damage was estimated at six to seven million dollars. There were numerous injuries but only one life was lost thanks to accurate forecasting, the advance warning, and the unusual darkening of the sky as the tornado approached. The dark sky led many persons to seek protection in basements or drive away from the tornado path.

Just how could Forecaster Coulter know where the tornadoes would be likely to hit? To answer the question we have to go back a dozen years to March 20, 1948. On that day the entire length of Tinker Air Force Base, outside Oklahoma City, was raked by a violent tornado that destroyed $10,250,000 in aircraft and other valuable property stored in the open.

In the shelter of a storm cellar during the disaster two Air Force meteorologists shared a deep sense of inadequacy. They were Maj. E. J. Fawbush and Capt. Robert C. Miller. The routine forecast for the day had predicted only thunderstorms in the vicinity.

Before a board of inquiry called the next day, investigating officers learned something that weathermen had known for many years: it was possible to forecast tornadoes somewhere in a large area, but not to tell when and where they would strike. Setting aside all other duties, Fawbush and Miller went to work to study the weather conditions present in the devastating storm. Careful comparison of previous storms with the twister at Tinker on March 20th revealed similarities in shape and movement of the surface storm, as well as in the distribution of moisture in the lower level, and in the wind flow at higher levels above 10,000 feet.

Just five days after the Tinker tragedy, Fawbush and Miller began to devise what was soon to become their new theory on weather factors that are almost always present in the development of a tornado. A weather check on March 25th showed a thunderstorm in the making. They noticed that weather conditions were about the same as on the day of the tornado. They issued tornado warnings. The second tornado followed a path almost identical with the first, but their warning enabled the base to take precautions and damage was negligible.

Since then the Fawbush and Miller severe weather warning technique has made meteorological history. Now in use by the Air Weather Service and the U. S. Weather Bureau—with a few new wrinkles added—it has enabled weathermen to attain a high batting average in correctly calling the turn on twisters in the tornado-ridden States of the mid-west.

The Fawbush-Miller method of forecasting tornadoes is based on a study of all tornadoes for which sufficient synoptic data is available. According to their theory, these weather elements must be present before tornadoes will develop. There must be a strong flow of moist air moving from a southerly direction over the area—usually coming from the Gulf of Mexico. This moist air layer must extend from the ground upward to a height of from 3,000 to 9,000 feet in the suspected area. There must also be an influx of drier air aloft, which surprisingly is heavier than moist air, so that a sharp zone of change occurs between the moist and the dry air. The dry air normally comes in from the west or southwest.

In this dry air there must be a narrow band of strong winds flowing from a westerly direction, driving the dry air across the moist. This wind band is usually found near 14,000 feet above sea level. It must flow across the moist tongue at about right angles. With these elements present, the warm moist air and the dry air above must possess "conditional and convective in-

stability." Simply stated this means the column of air in the suspected area must be subject to violent overturning. The air mass, when disturbed or "triggered," must lose its balance so that the air in lower levels will break through and violently funnel upward.

Finally, a "trigger action" must set the entire process in motion. This is furnished by an approaching cold front, or squall line—a line along which thunderstorms develop and move eastward. Some of these rules and a few others had been known to weathermen before. But it was the use of these in combination that was first applied by Fawbush and Miller. When all their conditions are met in one area and at one time, "It's a tornado."

Fawbush has described the trigger action—the sudden lifting which serves as a kick in the pants to the twister—as being like that of a cork, weighted down in water, shooting upward when the weight is removed.

Today, Air Force and Weather Bureau meteorologists, using an improved version of the Fawbush-Miller tornado forecasting technique, are pooling their facilities and know-how in a combined all-out effort to anticipate the tornado—the violent local storm with whirling winds which kills an average of 200 a year in the U. S. and causes property losses running in the millions.

Around the clock, 365 days a year, they keep their radar and electronic eyes peeled and radiosonde ears cocked in a ceaseless vigil to record all weather in "Tornado Alley"—the broad strip of U. S. stretching from the Gulf Coast of Texas and Louisiana generally northward to the Great Lakes—where 90 percent of all tornadoes in this country develop.

In a joint office located on the ninth floor of Kansas City's radar-dome-topped Federal Building airmen of the USAF Air Weather Service Severe Weather Warning Facility work alongside SELS (Severe Local Storms Unit) men of the U. S. Weather Bureau. Their important job: to analyze and interpret the mass of weather data funneled into the Kansas City center from everywhere, analyze and interpret it and piece together a mosaic weather picture, identifying general areas where conditions are favorable for tornado development.

Tornado Alley data is collected by every available method. Mobile USAF rawinsonde teams make upper-air soundings of temperature, humidity, pressure, and winds with tiny radios attached to balloons. A network of permanent Weather Bureau rawinsonde stations operate year-round, but the tornado season (February 15-September 30) requires more comprehensive coverage so Air Weather Service sends out mobile teams from Tinker AFB, Okla., to provide better coverage.

From mid-February through September, six mobile rawinsonde teams operate in an area almost half the size of the continental United States. From Houston and Lubbock, Tex., their operations extend north to Denver, Colo., and Grand Forks, N. Dak.; southeast-

These Aircraft Serve the Weatherman

These aircraft with their highly complex instruments gather the data. Clockwise from upper left: B-47, F-106, B-66, U-2, and C-130.

Lt. Col. Ernest J. Fawbush (left) and Maj. Robert C. Miller devised a workable method of tornado forecasting. With a few wrinkles added, it has become the basic standard technique used by the USAF and the Weather Bureau to call the turn on twisters.

ward to South Bend, Ind.; southwestward to Greenville, Miss.

Other stations locate static electricity discharges using a radio direction-finding system called "sferics," (a term derived from the word "atmospherics") which pinpoints thunderstorms by their static electricity. Five strategically placed sferics "slave stations" locate static-discharging storms. When a significant discharge is detected, its direction is immediately flashed to the Kansas City control center where a computer electronically establishes fixes and disseminates the storm's location.

Up-to-the-minute reports from a chain of more than a hundred radar stations keep a weather eye on storms as far as 200 miles away.

Integrating the combination of sferics information, the rawinsonde balloon radio observations, and the radar reports, the Air Force and the Weather Bureau expertly analyze and plot to fix the location of active storms. The Weather Bureau issues a word summary weather picture every hour, a facsimile montage picture of the overall U. S. weather every three hours. Using the same facilities and information, similar severe weather warnings are issued by the Weather Bureau for civilian consumption and by the Air Force for specific military requirements. Revised warnings are issued when necessary. Storm warnings go out to all areas in the path of severe storms—damaging wind storms and tornadoes.

Through close cooperation, the two weather services keep the entire midwestern and south-central U. S. areas informed with up-to-the-minute forecasts during the tornado season.

New Forecasts Every Six Hours

The Air Force weathermen are part of Detachment 4, 4th Weather Group of the Air Weather Service. The organization is commanded by veteran weatherman Lt. Col. Arthur F. Gustafson.

Specialized sections of the detachment keep a ceaseless, wary watch and a record of all weather in the tornado-spawning Central Plains-southeast area. These sections include a Terminal Forecast Facility, a Quality Control and Research team, and sferics men, all working together in a harmonious group. Forecasting is the detachment's main job. A new weather forecast, issued every six hours by the men on duty over each 24-hour period, provides the upcoming weather picture for 30 bases (terminals) in an area stretching from the Rocky Mountains to the Mississippi River

During the season mobile Sixth Weather Squadron rawinsonde teams, operating out of Tinker AFB, Okla., cover Tornado

and from the Canadian to the Mexican borders. The forecasters work closely with the observers and the quality control men who maintain a verification program for Severe Weather Warning and terminal forecasts.

"We still miss about one-fourth as many as we hit in tornado forecasting," is the way one veteran forecaster sums up their batting average. Some 614 tornadoes were reported in 1960. Few were reported outside areas where at least severe weather was forecast.

Although no foolproof system has yet been devised against the tornado, Air Force and Weather Bureau men at the Kansas Severe Weather Warning Center have substantially reduced the loss of lives and property.

There is still nothing you can do about a tornado—except duck. But until recently there was no warning system to give people time enough for even that nor enough time for air bases to disperse their aircraft.

Air Force meteorologists vividly recall early September 1952 when a tornado ripped Carswell AFB near Fort Worth, Tex. Standing on the field and nearby were 107 B-36 intercontinental bombers—at that time America's principal insurance against enemy attack. The tornado reduced one $3,500,000 bomber to scrap and damaged the other *Peacemakers* to the tune of $44,500,000. Within seconds the entire fleet was out of action in what could have been a national disaster. Today the USAF tornado warning network permits aircraft to be moved in safety; warns airborne planes to avoid the twisters' paths.

Little by little, scientists are unraveling the mysteries surrounding the tornado. A possible approach to the old dream of controlling tornadoes is to study tornado-forming thunderstorms.

This spring a group of Air Force scientific technicians will fly in *Operation Rough-Rider* (a cooperative project with the U. S. Weather Bureau and other agencies), to collect data on thunderstorm structure and associated weather phenomena at all altitudes.

New weather radars, strategically located throughout the U. S. keeps a weather eye on storms as far as 200 miles away. Meteorologists watching radar screens can identify the type of storm from which tornadoes are born.

Operating Air Force B-47s, B-66s, an F-106, a C-130, and a high-flying U-2, all highly instrumented, the airmen hope to get a first-hand look at severe weather in the making; learn more about how tornadoes are caused.

"Our men will fly out of Tinker AFB because weather research shows Oklahoma is the best place in the U. S. to study thunderstorms. They seem to develop about every third day during the season," explains Maj. James W. Bradbury, last year's Task Force Commander of the WADD contingent of *Operation Rough-Rider*.

"We are attempting to determine suitable thunderstorm penetration procedure at altitudes above 20,000 feet under all operational conditions, including penetrations at supersonic speeds. We are also making the study to determine operating characteristics of jet engines and aircraft performance under conditions of high ice-crystal concentration and severe wind turbulence."

The tests are being conducted in cooperation with the National Severe Storms Project which is a Weather Bureau responsibility supported by the Air Force, NASA, FAA, and Navy. At least 11 aircraft—including the C-130, B-47, and the high-flying U-2, will probe thunderstorms to obtain a more complete knowledge of severe local storms, to learn how to better forecast these storms, and to devise procedures that will minimize their hazards.

"We won't fly through actual tornado structures," Major Bradbury explains, "but we hope to learn enough about tornadoes so that eventually we can still further improve our knowledge of the twister's sullen funnel before it dips down to spread death and destruction."

Alley. They make upper-air soundings of temperature, humidity, pressure, and winds with tiny radios attached to balloons.

ROAR OF THE BEAST

A tornado (from the Latin *tornare,* "to turn") is the most violent storm nature produces. Essentially it is a vortex of destructive, whirling winds with uprushing currents of great lifting strength. The speed of the whirl has been estimated at from 400 to 500 miles an hour, although there is evidence that it is considerably less in many cases. The dynamic force of these wind currents results in a partjal vacuum at the center of the whirl which exerts an explosive effect as it passes over structures.

The most noticeable characteristic of a tornado, which distinguishes it from all other storms occurring over land surfaces, is the pendent, usually funnel-shaped cloud that is nearly always in evidence. Destruction starts when this cloud dips to the ground with a terrific roar, often described as resembling the noise of a thousand railway trains crossing trestles or the sound of a cannon prolonged for a few minutes. Observers have also mentioned a peculiar whining sound like the buzzing of a million bees, which is usually heard when the cloud is high in the air. It is commonly drowned out by the roar when the cloud makes contact with the ground and destruction begins.

From the midst of a thundercloud, the funnel-shaped cloud lashes out like a giant finger of whirling air that winds across the ground, sucking up matter in its path. As it picks up debris, the twister may turn black, brown, or even white if there is snow, on the ground. The tornado sweeps erratically across the country, usually at 25 to 40 miles per hour. Generally, it spends its force quickly. The average tornado travels only 16 miles. But within its area, it wreaks fantastic destruction.

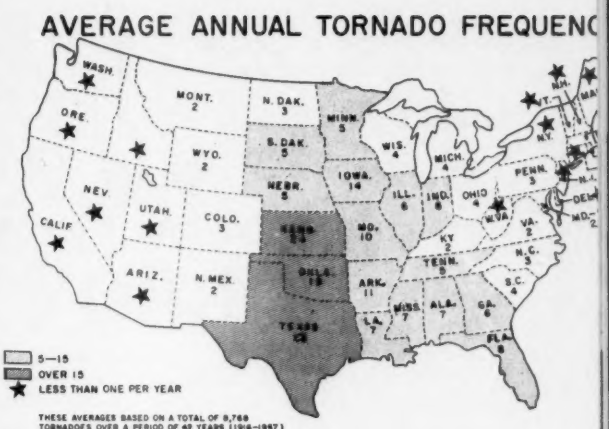
Buildings literally explode. Chickens are stripped of their feathers. Straws are sometimes driven into fence posts. Water is sucked from wells.

Not the least of the terror is the tornado's electrical display. Forked lightning—vividly outlined with yellow, green, blue, and purple—often dances against the dull glow of continuous sheet lightning.

The vortex remains a mystery because instruments cannot survive the devastating wind. Few people have looked up into the terrifying funnel and lived to tell what they saw.

One person who gave a clear account of what he saw was Milton Taber, editor of the Topeka *Daily Capital*. Tabor was out with a group of students picnicking just east of Lincoln, Nebr., late in the afternoon on March 23, 1913, when a tornado that was to cause appalling disaster at Omaha moments later passed directly overhead high above the ground. Tabor looked up into what appeared to be "an enormous hollow cylinder, bright inside with lightning flashes, but black as blackest night all around. The noise was like ten million bees, plus a roar that beggars description."

Another Kansan who saw the inside of a tornado funnel was Will Keller, a Greensburg farmer. In mid-afternoon on June 22, 1928, Farmer Keller sensed the peculiar oppressiveness of warm moist air which nearly always heralds the coming of a tornado. He looked around and was startled to see not one, but three twisters. Two looked like "giant ropes dangling from the sky"; one was funnel-shaped. He hurried his family to the storm cellar and decided to take one last look before closing the door. As the tornado approached the family "scarehole," it started to rise. In a matter of seconds the great shaggy end of the funnel hung directly overhead. There was a screaming, hissing sound coming from the end of the funnel. Keller looked up into the heart of the tornado. "There was a circular opening in the center, extending upward for a distance of at least a half mile," he reported later. "The walls of this opening were rotating clouds and the hole was brilliantly visible. Flashes of lightning zigzagged from side to side."



Shaded areas on the map show the relative frequency of tornadoes and, left, view of damage to community of Ruskin Heights, Kans.

The upward-spiraling winds which Farmer Keller saw carrying debris skyward have been estimated by leading meteorologists as reaching a velocity of 500 miles an hour. Their effect is that of a giant vacuum cleaner wherever the funnel touches the earth in its hop, skip, and jump over the countryside. The upward force of wind in the 1903 tornado at Snyder, Okla., was of such magnitude that people were sucked out of their storm cellars. However the biggest ever recorded was the Woodward, Okla., tornado. It dropped from the sky at 5:42 p.m., April 9, 1947, and tore through 14 towns in three states, leaving in its wake a 221-mile path of destruction, leaving damages of $9,700,000. It claimed 169 lives and injured 1,000 persons, destroyed more than 600 homes and damaged 900 others.

Radar view of an actual tornado which occurred near Topeka, Kans., May 1960. Hook is the head.

Meteorologists watching radar screens can now identify the type of storm from which tornadoes are born. Soon actual tornadoes may be spotted by means of radar.

The United States has the dubious distinction of having 98 percent of the world's tornadoes. It has suffered more than 6,000 of the dread twisters in the last 60 years.

Generally considered a phenomenon of the wide-open midwestern spaces, tornadoes in 1953 ripped through such populous areas as Flint, Mich., and Worcester, Mass.

The number of tornadoes reported has increased too. When the U. S. Weather Bureau first began to make a careful count of tornadoes in 1916, only 90 were reported.

Tornado warning networks have changed the tornado disaster odds. But in spite of these precautions the individual citizen in the tornado belt has to jump for his cyclone cellar to save his life. The late Snowden D. Flora, one of the outstanding tornado experts in the U. S., has said that: "Next to the cyclone cellar the basement of a frame house is safest. When one of these storms approaches from the southwest, as they usually do, crouch against the southwest cellar wall. The terrific wind will either blow the house and debris entirely away or drop them on the far side of the cellar."

This advice does not apply to basements of brick or stone houses. About all anyone can do when caught in a brick house during a tornado is to lie on the floor, the first floor preferably, and under a table or under a bed for protection from falling objects.

Motorists can escape a daytime tornado by driving at right angles to the storm. At night it is wise to bail out and lie in a ditch. Best of all in dealing with tornadoes, is to have a full measure of good luck.

TEACHING TOMORROW

by SMSgt. Hal Bamford

DURING THE CURRENT CALENDAR YEAR, USAF personnel officials estimate that nearly 13,000 officers and airmen will retire. Most will find new work—some out of necessity, others out of desire.

Whatever work is found, the transition from military life can be smooth only if proper preparation has been made.

In fact preparation is the key to one fertile job area which, strangely enough, many retirees will overlook. It is an area critically short of trained people and one which offers rewards exceptionally suitable for the retired military man. It is the teaching profession.

According to recent surveys, approximately 50,000 new teaching jobs were created annually during the last decade in the public school system alone. College demands have been growing apace. Conservative estimates indicate that by 1970 our institutions of higher learning will need some 400,000 new instructors.

In short, the teaching profession, already drastically short of fully qualified personnel, faces an ever increasing shortage which military retirees can help alleviate. A large percentage of retired military personnel are either already qualified for teaching positions or can easily become so with a minimum of effort and advance planning. And the transition into this line of work should not be too difficult because continuous education and training experience are characteristic of today's Air Force.

A growing number of airmen are pursuing degree work to fulfill active-duty obligations and insure career progression. Many will have attained a college degree before they end their Air Force careers. Hundreds of others will have the goal within comparatively easy reach.

It is true that many Air Force personnel have already decided that teaching is the answer to their post-military years, but the majority are unaware of the opportunity which is open to them. The need to spread the word has keyed a major recruiting campaign during the last few years. Sparked originally by educators, it has since been supported by several government departments, such as Health, Education, and Welfare, the Department of Labor, and in more recent years, the Department of Defense.

One consequence has been a flood of publications such as HEW's *Teaching Opportunities*. By and large, these publications outline teacher qualifications, opportunities, and methods of furthering studies in order to attain eligibility.

Despite some specific variations however, most tell the same basic story—disturbingly similar to the famed James Montgomery Flagg recruiting poster of World War I—we need you!

As noted earlier, the need is not confined to any one teaching area. Colleges, as well as secondary and elementary schools, both public and private, feel the growing shortage.

An Individual Decision

The decision as to whether to choose the teaching profession as a future pursuit is one the individual must make for himself—a decision that should not overlook several important factors. One is that usually it means beginning anew and almost certainly, near the bottom of the field.

Another is that financial rewards may be far less than those received during the military years or available after retirement in other occupations. Although the many school holidays might appeal to a retiree, he may not get them until he becomes a fully qualified teacher.

In other words, teaching is not a profession to be

entered into lightly. Its responsibilities are fully as great as those the retiree probably faced during his years in the defense establishment.

However, once the preliminary decision to enter the field has been reached, the steps are clearly defined.

The first move is to select your place of retirement. If the public schools are your oyster, write a letter to the Director, State Department of Education, in the capital city of the state selected. He will provide a complete rundown on the necessary qualifications.

Job placement facilities of the public employment service, Department of Labor, can also help. Applications may be filed at any U. S. Employment Service office. They have a professional network clearance system that ties together 83 major employment offices throughout the country.

If your preference is college-level employment, the best course of action is direct application to the college at which you want to teach.

Special Programs

Aware of the fact that most retirees will need further academic preparation, many colleges have established a number of preparatory programs. Quite naturally, the majority of these are aimed at preparing applicants for college-level work. Yet, there is presently a movement of almost equal force to guide prospective teachers into the profession at lower levels.

It may be surprising to learn that a recent survey revealed that approximately four percent of all college and university instructors hold no degree. Reason is that with the exception of public junior colleges, there are few professional requirements in methodology for university and college teaching. That is, the college is an entity unto itself and thus may select any instructor the administration feels will fill the bill.

Still, college administrations have become increasingly aware in recent years that knowledge of subject matter alone is often not enough. Consequently, increased attention is being given to professional education subjects such as principles and methods of teaching.

Several leading universities have in fact designed programs of study aimed at providing these necessary courses while still concentrating on primary subject qualification of military retirees.

Purdue University was one of the first to introduce such a program. It is aimed specifically at mathematics and requires two regular semesters and a summer session to complete, leading ultimately to a master of science degree. The content includes advanced mathematics, methods of teaching and practice teaching of undergraduate classes at the university.

Duke University has a program somewhat similar in content and aim. Brown University recently joined the growing list of schools offering such graduate programs, designed primarily for the ex-military man. However, while most are stressing science and mathematics, Brown's program encompasses any chosen area of concentration and also leads to a master's degree.

Florida State University aims its program at the preparation of teachers for either junior or senior colleges. However, as in the case of those already discussed, it too leads to a master's in a chosen field, concentrating on subject-matter courses but also including from 6 to 12 hours of professional education work.

Dozens of other colleges are initiating similar programs. Among the more recent converts are Yeshiva University in New York City; Catholic University of America, Washington, D. C.; Roosevelt University, Chicago, Ill.; and Stanford University, Palo Alto, Calif.

This list, of course, is not all-inclusive and many additional schools have undertaken the task of helping both retirees and the active-duty personnel in nearby areas to further their education.

The University of Maryland, for example, already widely known for its worldwide efforts, has recently begun including professional education courses within the scope of its varied offerings.

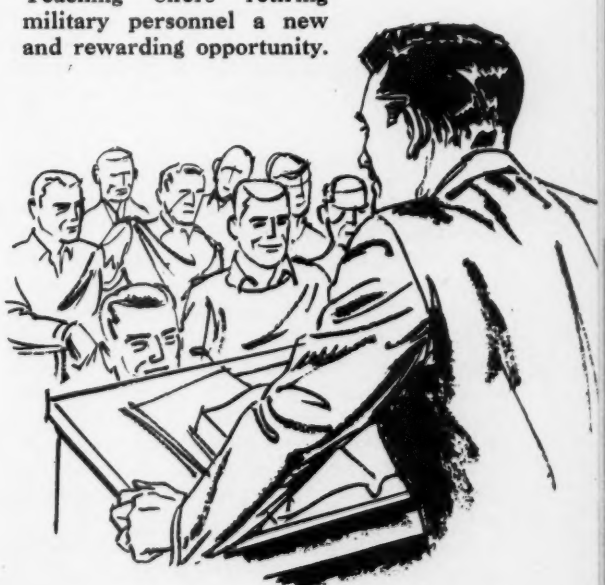
For the man who is truly interested in a teaching future, just a little effort on his part will usually lead to the discovery that almost any college will be more than willing to cooperate.

Begin Now

Once the decision for teaching has been reached, an area selected and requirements ascertained, base education officers can assist you in the next step.

Preparation can never begin too soon. With the emphasis the Air Force places on education, active-duty years present an excellent opportunity to improve present skills while laying the initial groundwork for your future.

Teaching offers retiring military personnel a new and rewarding opportunity.



Financing problems will usually prove to be less acute, for example, during active-duty years. However, many retirees will also find themselves eligible for educational benefits under the Korean G. I. Bill. Certainly this is an area which should be explored thoroughly when planning for your future as a teacher.

For the purposes of preliminary planning, it should be kept in mind that if a reenlistment has been entered into since January 31, 1955, the applicant must begin his schooling within three years from the date of that reenlistment.

Thus, many have sacrificed these benefits by continuous service. However, some will still qualify and it is possible to receive up to 36 months of schooling under the bill's provisions. Again, the base education officer can give at least preliminary assistance in determining individual eligibility, and officials at any VA office will be more than happy to review specific problems.

Local scholarship plans and the National Defense Education Act are among other programs which should be explored in any post-career educational planning.

As noted earlier, the colleges are not the only educational institutions in need of additional instructors. As a matter of fact, the nation's public school system is probably in even more dire straits.

Between now and 1963, instructional staff openings in public schools are expected to expand at the rate of nearly 60,000 annually. By the latter part of the decade, they will probably even exceed this figure.

When consideration is given to the fact that a shortage of nearly 150,000 qualified teachers already exists in the public school system, it is quite evident that the annual output of graduates cannot begin to overcome the present dearth.

The largest demand will be at the secondary or high school level. Here, nearly 250,000 new teachers will be needed before the current decade ends. Elementary schools are close behind, but slightly less in need.

These figures do not include the nation's private school requirements and, in many cases, the military preparatory school presents one of the most attractive opportunities for the retired officer or airman.

Nationwide Qualifications

Naturally, such figures lead to the inevitable question, "What do I have to do to qualify?" Earlier in the article, it was noted that the best advice is to correspond directly with officials in the state in which you intend to retire. However, if you have not made such a decision as yet, the accompanying chart has been extracted from the National Education Association's *A Manual on Certification Requirements for School Personnel in the United States* and may serve as a rough guide. The manual itself provides considerably greater detail.

For practical purposes, private schools normally will require the same certification level as the public schools system.

Even a quick glance at the chart reveals the startling information that a college degree is not always a qualification prerequisite for teaching in many states. However, this is only a guide, and again, interested applicants are advised to contact education officials in the state of their choice for full particulars.

Ambitious airmen with only a short time before the reach retirement can employ spare time profitabl

One other point should be borne in mind. Because of the very real shortage, exceptions are often made even to the minimums listed here and temporary certificates are often issued. These normally include the provisions that the necessary further study will be undertaken to assure eventual fully-qualified status.

In this area, as with preparation for college teaching, several schools have established special programs. For example, the University of Southern California is working with the Los Angeles Board of Education and has established special training courses to qualify teachers in off-hour training.

Specifically, the Los Angeles-University of Southern California program is aimed at persons holding a bachelor's degree but not presently in the teaching profession. Candidates are required to attend USC classes during the summer session immediately prior to the opening of the public school year. During this period, they study such professional subjects as child development, the learning process, guidance and evaluation, and directed teaching.

With the opening of the fall term, the candidate assumes a regular salaried teaching position in Los Angeles and concurrently, at night or on Saturday, attends classes at USC related to classroom problems.

The following summer, he is required to take an additional 10 hours of classroom work to complete the requirements for his permanent teaching certificate. Classes during this period are determined largely by individual advisement.

San Francisco has established a similar program and many other colleges and major metropolitan areas are studying these results with an eye toward getting

ilar programs underway if these prove successful. The question of financial remuneration is one that been constantly in the headlines in recent years. the surface, teaching pay is not the best; however, cold figures can often be misleading.

Beginning teachers, regardless of past experience side the educational system, will normally be re-red to start at the bottom of the scale. However, with most other "requirements" in the profession, eptions are often made if hiring officials believe t experience can be classed in a category considered ivalent to teaching.

At the college level, a recent survey indicates that beginning instructor averages about $5,000 an-lly. Depending upon the school, this may range m as low as $4,500 to as high as $5,600. However, road to higher designations in the educational rank-system is open and professional pay may climb ond the $10,000 level.

The same is generally true in the public schools, hough here the beginning range may be even ater. For example, beginning average for elemen-y teachers in Mississippi are about $2,900. On the er hand, the maximum may go well beyond the 000 level in such areas as Washington, D.C., once naster's degree has been attained and the teacher spent a reasonable period within the system.

Generally speaking, salaries will reflect living costs l the degree of need in most job areas. The largest centage of the teacher shortage problem is centered rural areas where the pay is generally lower than earby cities. In parallel, living expenses are usually portionately lower in such areas as well.

Quite obviously, there are many specifics to be taken o consideration which will not be discussed in detail e.

However, every interested agency is ready to supply ded details or simply discuss possibilities. Literally dreds of publications are available which cover the ject in detail simply for the asking.

Among the better pamphlets is *Teaching: A Second reer*. Scheduled for distribution within the next few ks, it has been compiled by the Department of De-se and will soon be available to all interested active-y personnel.

t discusses most of the many facets of qualifica-s, opportunities, pay, securing of a position, and ilability of other information in great detail. It also ludes an extensive bibilography on related materials ilable from many sources.

Teaching can be a rewarding activity. Most retirees e spent at least a portion of their active-duty years raining newcomers and in association with younger mbers of the defense establishment.

t doesn't take too much imagination to picture an ustment from this atmosphere to that of the class-m. Here are made the scientists and civil and mili-y leaders of tomorrow. What better way could you ise for continuing your contribution to this nation's ore?

MINIMUM REQUIREMENTS FOR TEACHING CERTIFICATES

State	Elementary School			High School		
	Degree or Semester Hrs.	Professional Education, Semester Hrs.	Directed Teaching, Semester Hrs.	Degree or Semester Hrs.	Professional Education, Semester Hrs.	Directed Teaching, Semester Hrs.
1	2	3	4	5	6	7
Alabama	B	30	3	B	24	3
Alaska	90	16	4	B	16	4
Arizona	B	18	6	5	18	6
Arkansas	60	12	3	60	12	3
California	B	24	8	5	22	6
Colorado	60	20	4	B	20	4
Connecticut	B	30	6	B	18	6
Delaware	B	30	6	B	18	6
District	B	40	6	5	24	6
Florida	B	20	6	B	20	6
Georgia	B	18	6	B	18	6
Hawaii	B	18	AC	B	18	AC
Idaho	B	20	6	B	20	5
Illinois	B	16	5	B	16	5
Indiana	B	35	6	B	18	5
Iowa	60	20	5	B	20	5
Kansas	60	6	0	B	18	3
Kentucky	B	28	8	B	18	8
Louisiana	B	24	4	B	18	4
Maine	96	AC	AC	B	12	0
Maryland	B	32	6	B	16	3
Massachusetts	B	18	2	B	12	2
Michigan	B	20	5	B	20	5
Minnesota	B	30	6	B	18	4
Mississippi	B	24	6	B	18	6
Missouri	64	5	0	B	18	5
Montana	64	30	10	B	16	3
Nebraska	12	6	0	B	18	3
Nevada	B	18	4	B	18	4
New Hampshire	B	AC	6	B	21	6
New Jersey	B	30	6	B	18	6
New Mexico	B	24	6	B	24	6
New York	B	36	12	5	18	2
North Carolina	B	18	3	B	18	3
North Dakota	32	16	3	B	16	3
Ohio	B	28	6	B	17	6
Oklahoma	B	12	0	B	12	0
Oregon	B	20	4	B	24	6
Pennsylvania	B	30	6	B	12	6
Puerto Rico	67	30	6	B	21	5
Rhode Island	B	30	6	B	24	6
South Carolina	B	21	6	B	18	6
South Dakota	30	5	2	B	20	5
Tennessee	B	24	4	B	24	4
Texas	B	24	6	B	24	6
Utah	B	30	8	B	22	8
Vermont	B	18	6	B	18	6
Virginia	B	24	100 CH	B	18	100 CH
Washington	B	27	10	B	27	10
West Virginia	64	11	3	B	20	5
Wisconsin	64	26	8	B	18	5
Wyoming	60	NS	NS	B	20	C

AC—Approved curriculum. B—Bachelor's degree of specified preparation. C—Course. CH—Clock Hours. NS—Not Specified. Where the figure 5 appears under the high school section in the degree or number of semester hours required column, this specifies a bachelor's degree plus a fifth year of special preparation, not necessarily completion of a master's degree.

intentionally leave out the others who completed this record-breaking crew.

Kenneth W. Newland
Alexandria, Va.

• *The complete crew of the* Question Mark *also included Lt. Elwood R. Quesada, Lt. Harry A. Halverson, and Sgt. Roy W. Hooe in addition to the gentlemen mentioned in the original story. The two refueling aircraft were commanded by Capt. Roy G. Hoyt and Lt. Odas Moon. The refueling planes and crews made a total of 42 contacts during the record flight of 150 hours 40 minutes 14 seconds.*

★ ★ ★

OCS Query

Sir: I intend to undertake the OCS entrance examinations this year. Consequently, I was most interested in your article on the subject in the January issue. However, I still find one question unanswered. If a candidate washed out of the course, is he automatically and permanently disqualified? Also, does the Air Force have a course which would assist me in preparing for OCS?

A3C Albert M. Cenci
McGuire AFB, N. J.

• *According to the information contained in AFR 53-3, unless the faculty board of the Officer Candidate School specifies that a washed-out student is not so qualified, he may be retained for training with a later class. There are also instances in which the Commandant may order such retention without board action. With reference to an advanced course, we recommend you consult your education officer regarding a general course of this nature which is administered by ECI.*

★ ★ ★

No Error

Sir: On page 24 of the January issue in the article *The Manned and the Unmanned,* it is claimed that the Republic F-105D holds the world's 100-kilometer closed course speed record. Actually, it was established in an F-105B, flown by Brigadier General Moore, Commander of the 4th Tactical Wing.

A1C John W. Cleve
Seymour Johnson AFB, N. C.

• *To quote the article in question, "In September, TAC formally accepted the Republic F-105D* THUNDERCHIEF, *the newest all-weather version of the tactical fighter that holds the world's 100-meter closed course speed record." Our claim is only that the D-Model is the newest version of the record-holder, not that it holds the record itself.*

★ ★ ★

Medal Of Honor

Sir: I do not often see a copy of THE AIRMAN, but in a recent issue of your excellent magazine I was most impressed by the *In The Name of Congress* article which it contained. Is it possible for me to get copies of this entire series?

William F. Clarke
Levittown, Pa.

• *Unfortunately, we do not have complete files on hand which are available for distribution. Additionally, the Superintendent of Documents does not stock back copies. Despite our inability to fulfill your request, our hearty thanks for the kind words regarding the series.*

★ ★ ★

Misspelled Name

Sir: In your January issue, you mentioned a Capt. Ira C. Baker. Don't you mean Eaker? Shame on your proofreaders.

Capt. M. W. Misall
Portland AB, Ore.

• *You are quite correct. Each of our proofreaders is currently engaged in reading General Eaker's biography to be certain such a slip never occurs again.*

★ ★ ★

What Happened?

Sir: What is going to happen to that Air Force station wagon which has been abandoned in front of the KC-135 pictures on page 17 of your December issue? With no driver, doors open, and parked right in front of a pod, that wagon is a sitting duck.

MSgt. Dale N. Osborn
Grand Forks AFB, N. Dak.

• *The photo was posed solely for illustrative purposes. SAC crews, under normal circumstances, would not permit such an error. The photo was meant to illustrate the manner in which these crews arrive and the haste with which they take to the aircraft. I trust the fact that we have never lost a station wagon in this manner will be sufficient to smooth over our error and soothe ruffled feelings.*

★ ★ ★

Corrections

Sir: My congratulations on Sergeant Bamford's excellent article concerning *Project Automate, Revolution in the Orderly Room.* However I would like to point out a slight error which appeared. Col. A. J. Curbo, Jr., is identified as Hqs. Command Comptroller. In reality, he is Deputy Chief of Staff, Personnel, Hqs. Command.

Maj. Kenton C. Murphy
Bolling AFB, Wash., D. C.

• *Major Murphy is correct. Our error.*

★ ★ ★

Sir: In the December issue of THE AIRMAN, you have made two errors with regard to a story on a rescue mission in Greenland. First, Thule is an ADC base under the 64th Air Division, based at Stewart AFB, N. Y. Second, Resolute Bay is 400 miles west of Thule, not north.

A1C Robert Livingtop
APO, New York, N. Y.

• *At the time the article was written, Thule was still under SAC jurisdiction. We regret our lead time did not allow a correction to be made before the article appeared. Thank you also for pointing out the location of Resolute Bay which we inadvertently moved.*

SLANTS ON SPACE

The deepest crater on the Moon has walls which rise between 29,000 and 30,000 feet from its floor. Even taking the lower estimate, the crater would all but swallow up the Earth's most lofty peak, Mt. Everest, whose height is 29,028 feet. This crater is named for Sir Isaac Newton (1642-1727), famed English physicist and philosopher, who was the first to formulate the law of gravitation and the laws of motion, as well as the inventor who gave astronomy the reflecting telescope. Newton Crater is located in the southeast quadrant of the Moon virtually on the southernmost edge of that portion's limb (or rim, as laymen might refer to it).

Numerous lunar craters have depths varying from 9,000 to 18,000 feet. The largest in diameter is approximately 180 miles across and was named for Jean Sylvain Bailly (1736-93), French astronomer and politician guillotined during the Reign of Terror. The second widest, estimated at from 132 to 145 miles across, is Clavius. Both are located in the southeast quadrant, like Newton.

Lunar quadrants, incidentally, may be designated numerically or in the familiar compass direction we use in everyday life. The southeast quadrant is also called the third quadrant, and the southwest, the fourth quadrant. The northwest and northeast quadrants are the first and second respectively.

Antares, a supergiant red star and one of the 20 brightest in the heavens, has a density estimated at about 0.0001 that of the ordinary air we breathe, or less than two-ten-millionths the density of that ordinary yellow star which is the Sun. The distance between Antares and the Earth is estimated in the order of 250 light years. For observers Antares shows with greatest brilliance in the summer night skies.

"Have banana; will travel." That has been these past many months the unofficial slogan of the jungle-recruited "student body" at Holloman AFB Aeromedical Center, N. Mex., where chimpanzees have been receiving training and conditioning for space flight experiments.

As for Ham (alias No. 65), who did this alma mater proud the last day of January by his pioneering chimpastronaut sortie through space from Canaveral, the name given him was an acronym derived from the initial letters of *H*olloman *A*ero-*M*edical. Numerous accounts of his successful mission inaccurately reported that the name resulted from his tendency to behave in the ham actor tradition at every opportunity while an undergraduate. This explanation was widely believed because of definite histrionic ability which Ham displayed during his waving, smiling trip to the launch pad, upon his watery recovery, and generally ever since when he sensed he had the limelight.

That "alias No. 65" he came by not as a suspect in campus wrongdoing or infraction of the law at Holloman. The Aeromedical Center there assigns each of these highly intelligent primates a number when they arrive, so the only significance is that Ham was the 65th trainee to "matriculate" for the Hollomon courses.

All chimpanzees in training soon acquire nicknames because this practice seems to help establish a special feeling of relationship between the animal and his particular handler. An occasional name, such as Sam, may have an underlying significance, in this case it combined the initial letters of the School of Aviation Medicine. In other instances, they are the random choice of handlers, with the variety ranging from Tiger to Paleface, even Elvis. The process is akin to giving newly acquired pet dogs generally meaningless tags like Rover, Spot. Missy, etc. At first, it is the combination of sounds the name involves plus the fact it is spoken in the voice of master or mistress that counts. Then repetition of the name conditions the animal to respond when addressed by others.

Ham was 3 years 8 months old when he blasted off on his now his-

TENDER, LOVING CARE. Ham, the Space-jaunting chimp, cuddles up affectionately to A3C I. L. Beachan, animal handler at Holloman. Better than the proverbial thousand words, the picture gives some idea of the close bond which develops between the remarkably intelligent primates and their trainers during the instruction course which prepares the chimps for missions which will help man successfully invade the wide new yonder.

toric flight. Judged solely by standards of relative longevity, one year in a chimpanzee's life is about the equivalent of two for a human being at present averages, for the jungle primate's life span runs between 30 to 40 years. Longevity comparison, however, is no reliable guide where ability to learn or perform work is concerned. Some young chimps are much quicker in learning routines and responses than others of the same age or older. The same, of course, is true not only of school children but onward through human adulthood. The difference is that, once past the age of four and a half years or so, a chimp's capacity to go on learning virtually ceases, whereas with a human being the receptivity to new knowledge normally keeps increasing, and with individuals of high talent the learning capacity seems insatiable.

The question has been asked how chimpastronaut Ham might be rated for the way he performed his programmed flight tasks. Experts on the subject conservatively state that the performance was every bit as good as a quite bright child of six years of age or so might have done under the circumstances. This guarded professional opinion, it should be noted, does not take into account the inimitable theatrical touches Ham contributed to a most memorable scientific occasion and his instinct to make the most of the high drama in which he was starring.

More than half of the meteors which penetrate the Earth's atmosphere are traveling at velocities of less than 26 miles per second, speeds which make it possible to identify theoretically as components of the Solar System. Meteors with velocities higher than 26 miles per second are believed to come from somewhere beyond its planetary limits but definite scientific knowledge is yet lacking as to their origin.

—WILLIAM A. KINNEY

Estimates, based on current financial indices, are that the total cost per launch will be approximately $9,100,000 for the *Centaur,* new multipurpose space vehicle which is scheduled for its first flight from Cape Canaveral in the second half of this year. The sum may be contrasted with the total expenditures of the old War Department for the opening year of the War of 1812—$11,817,798.

Here is the tentative breakdown on the *Centaur* total: basic vehicle, $5,300,000; integration of payload with launch vehicle, $1,000,000; launch service per vehicle (on basis of a six-launch annual rate), $2,770,000; and inhouse management services per vehicle.

A second, or upper, stage system, the *Centaur* will be mated with a modified Air Force *Atlas* ICBM as the first stage booster. Conceived as the workhorse upper-stage vehicle for both military and scientific programs over the next several years, the *Centaur* will be the first operational vehicle propelled by a liquid oxygen-liquid hydrogen engine, which is expected to develop a specific impulse of about 420 pounds of thrust per second per pound of fuel consumed. This would be a substantial gain over the performance of the best liquid oxygen-kerosene engines in use at present which deliver specific impulses in the order of 300 thrust pounds per second.

The *Centaur,* equipped with an all-inertial guidance system, will have the capability, it is anticipated, of putting payloads of 4½ tons into a 300-mile orbit and, of course, payloads of less weight into orbits far more distant. Its frame has a diameter of 10 feet and an overall length of 105 feet. Gross weight of this vehicle is slightly over 145 tons.

Centaur IN FINAL ASSEMBLY. **The booster stage for NASA's *Centaur* launch vehicle has entered final assembly at Convair's San Diego plant. The booster airframe, just beyond the missile in the foreground, is identical with that of USAF *Atlas* ICBMs in adjoining docks, except that it is of constant 10-foot diameter, not tapered at forward end. This increases the fuel capacity.**

AIRMAN'S WORLD

STINGER IN THE TAIL is an apt description of the Gatling gun armament which protects the rear of the new Boeing B-52H, presently in production. The six-barrel, revolving cannon is capable of firing some 4,000 rounds of 20-mm. ammunition per minute and represents one of the major external improvements incorporated into the latest version of SAC's intercontinental veteran.

BITS OF BLUE

. . . Officials have announced that the 670th AC&W Sq will be transferred from San Clemente Island AFS, Calif., to Fort MacArthur, Calif., this month. In May, the 772d Radar Sq (SAGE) will also move from Claysburg AFS, Pa., to Pedricktown, N. J.

. . . *The Prairie Pilot,* weekly base newspaper at Webb AFB, Tex., heads its birth column *Toothless Tigers.*

. . . New APTs will be administered in three career fields during coming testing cycles. Communications Operations (29) personnel will face a revised test during its second cycle in June. Information (72) and Supply (64) personnel will undergo their revised tests during the third cycles in July and August respectively.

. . . For the second consecutive year, USAF's 81st Tactical Fighter Wing, based in England, has won the American Ambassador's Award Competition for its "realistic approach to the People to People program" and outstanding community relations in Great Britain.

. . . The 86th Bomb Squadron has maintained a perfect flying safety record through more than four years of operations. Initiated by the 37th Bomb Squadron, which has since been deactivated, the record now extends beyond the 22,000-hour mark. The two units have utilized B-66 aircraft throughout the record run.

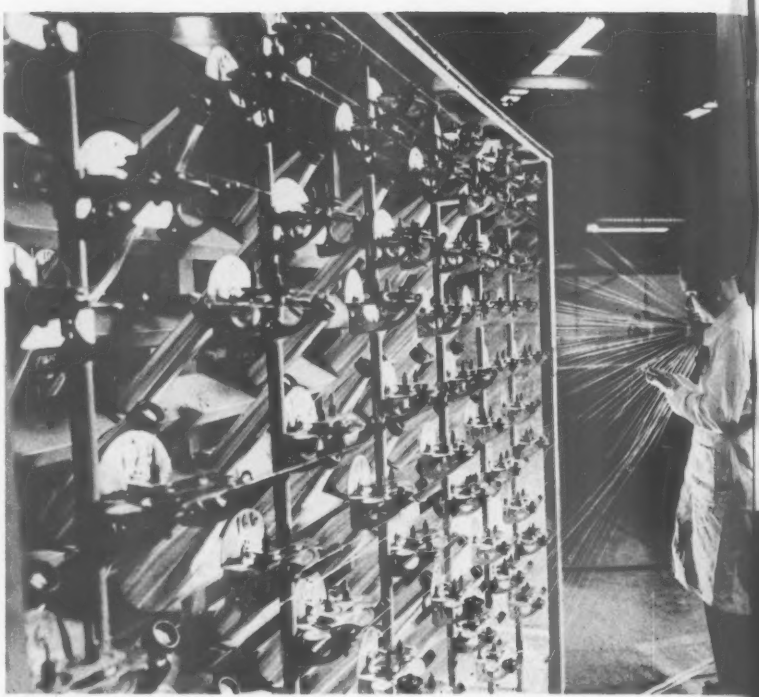
TRANSITION TRAINING

Pilots from the "pioneer" 36th Tactical Fighter Wing, Bitburg AB, Germany, began transition training last month at Nellis AFB, Nev., preparatory to their wing's conversion to F-105D *Thunderchiefs.*

For the third time in a little more than a decade, the 36th, one of the oldest fighter organizations in USAFE, will lead the way into a new era.

In 1948, the unit was the first in Europe to utilize F-80 *Shooting Stars,* an aircraft they brought with them from Panama. Less than three years later, they transitioned into F-84 *Thunderstreaks.* Now, within the next few weeks, the unit will gradually begin replacing their F-100s, acquired in the mid-50s, with USAF's latest fighter acquisition.

The 1,400-m.p.h. F-105 has been in use by Tactical Air Command organizations in the ZI since late in 1958. It carries what has been described as the most lethal and versatile array of armament of any military combat plane presently in use and will mean a solidly increased punch for front-line USAFE.



DECORATIONS

Three crewmen of the 551st AEW&C Wing, Otis AFB, Mass., have received decorations in recognition of the part they played in saving their RC-121 from destruction and averting what could have been a major air tragedy.

Two hours after leaving Otis on a routine overwater picket mission, number three engine developed a runaway propeller. Unable to feather or control it, Lt. Joseph T. Long radioed his home station that he was taking the plane down to 500 feet, preparatory to ditching.

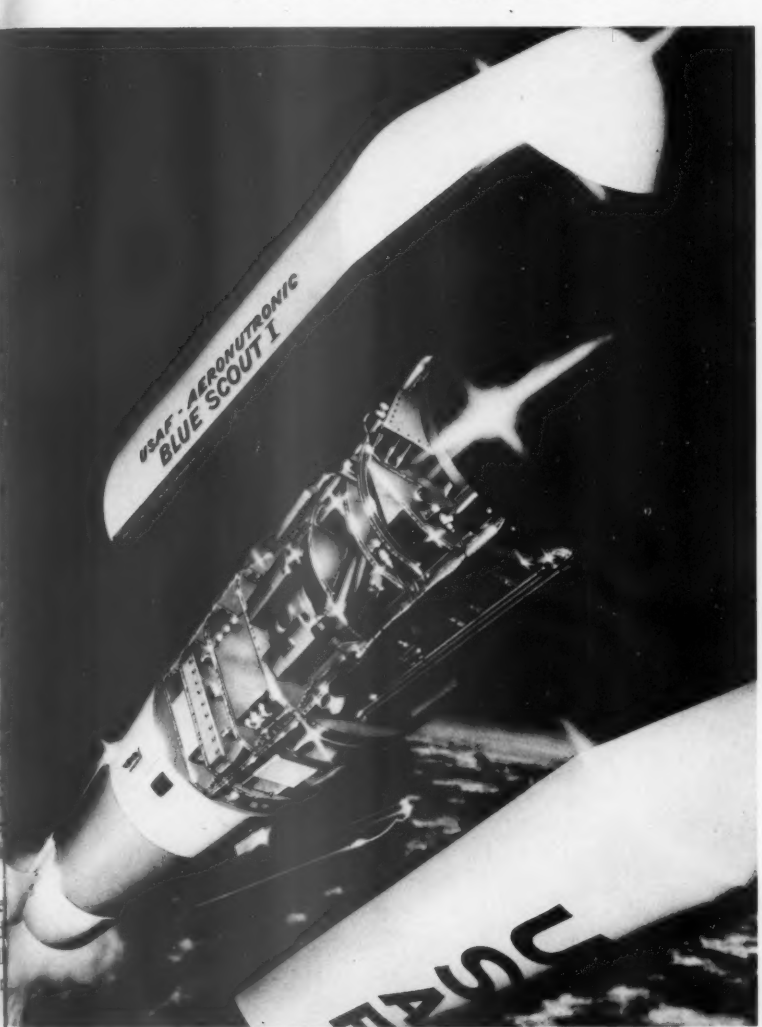
Shortly after making this initial call, the engine shook itself loose from its mounts and dropped into the ocean. Divested of his main problem, Lieutenant Long eased the plane back to 1,200 feet and headed for Kindley AFB, Bermuda, the nearest Air Force station.

Assisted by his copilot, Lt. Joseph M. Haber, and the flight engineer, TSgt. Marvin J. Bell, Long nursed the crippled aircraft into Kindley and landed safely despite blowing a tire on landing. None of the 19 crew members were injured.

Lieutenant Long received the Distinguished Flying Cross, and Lieutenant Haber and Sergeant Bell were presented with Air Medals for their parts in the accomplishment.

SPUN-GLASS FUEL TANKS. Fiber glass threads are fed under tension to a resin-impregnating device and will be later bonded together to form spun-glass fuel tanks for rocket engine installations. The Boeing Airplane Co. is experimenting with this development under a $100,000 contract from USAF's ARDC. Tanks measure six feet in diameter, are 21 feet long and hold 3,100 gallons. Each contains two compartments, one for rocket fuel, the other for fuel oxidizer, and are lined with special aluminum foil and plastic sheeting. Success will mean lower fabrication costs and lighter weight.

SHEDDING ITS PAYLOAD heat shields, USAF's *Blue Scout I* is shown high above the Atlantic Ocean in this artist's concept. Fired successfully early in January, this solid-propellant rocket is designed to measure eight different types of environmental conditions in space. On its first flight from Cape Canaveral, Fla., it achieved an apogee of more than 1,000 miles and impacted more than 1,000 miles down range.



PRESIDENTIAL PILOTS

News of the appointment of a new Presidential pilot stirred memories of those who have preceded him and the aircraft they flew for the nation's Chief Executive.

Lt. Col. James B. Swindal was recently named pilot of President John F. Kennedy's aircraft. The new president will utilize any one of three four-engine jet liners based at Andrews AFB, Md., or one of two DC-6 piston-engine transports at Washington National Airport.

The new appointment leaves three pilots and airplanes once assigned to former Presidents. Col. William G. Draper, who flew President Dwight Eisenhower's *Columbine,* a *Super-Constellation,* and a jet airliner, is currently undergoing single-engine jet training and will be assigned as deputy commander of the fighter unit at Elmendorf AFB, Alaska, upon completion of his schooling. Meanwhile, the *Columbine* has been returned to the regular inventory of the 1254th Air Transport Wing for use on special missions.

Of the two earlier Presidential pilots, only one remains on active duty and he has announced retirement plans. Col. Francis W. Williams, former President Harry S. Truman's pilot, is the Inspector General of MATS' Western Division, Travis AFB, Calif. However, he will end a brilliant 30-year career this month.

Colonel William's predecessor, Lt. Col. Henry T. Myers, flew the *Sacred Cow* for the late Franklin D. Roosevelt, and is also still flying. However, he now wears the uniform of an American Airlines captain, resides near Fort Worth, Tex., and flies a regular commercial 707 run.

The C-54 which bore the name *Sacred Cow,* and the *Independence,* are both assigned to the 1254th Air Transport Wing at Washington National Airport. They now fly special missions as aircraft Nos. 7451 and 6505 respectively.

All three will eventually be turned over to the Smithsonian Institution for historic preservation.

NEW TRAILER

Maj. Clarence G. Gowan and MSgt. Elmer Six have combined their talents to produce a mobile bench stock trailer that may eventually be adopted throughout the Air Force.

Designed by Major Gowan, the mobile mechanic's friend was built by Sergeant Six from a salvaged 28 x 8 foot house trailer. It is presently being utilized as a regular element of the 55th Bomb Wing's maintenance procedure at Forbes AFB, Kans. The trailer is towed through the 55th flightline area and when a mechanic needs its services, he simply flags the driver. During the normal day's operation, the trailer covers approximately 25 miles.

More than 800 parts are housed in the unique vehicle and each is catalogued in glass-covered cases on its side. Officials estimate its use will save the 55th approximately 1,000 man-hours monthly.

HUSTLING HUSTLER

USAF has submitted claims of six new world speed and payload records for its B-58 *Hustler* to the Federation Aeronautique Internationale for authentication.

Established on January 13 over a special course originating at Edwards AFB, Calif., the marks include three over a 1,000-kilometer course and an equal number over a 2,000-kilometer run. Of the six new records, five were formerly held by the Soviet Union.

LATEST ADDITION TO USAF's AIRCRAFT INVENTORY is the Cessna U-3B. A five-place, twin-engine aircraft, the new models are improved versions of the U-3A which has been in Air Force service since 1957, fulfilling administrative and light-cargo missions. The plane has a cruising speed of 220 m.p.h. and a range of over 1,400 miles.

NEW LIGHT

A new light is shining for USAF. "White-light" illumination for cockpit instruments is being put to its first operational use within USAF in the Northrop T-38 *Talon* supersonic trainer Air Force officials have disclosed.

Use of this filtered white-light system in aircraft cockpits is expected to enable pilots flying at night to distinguish colors on instruments and maps. The system uses a blue filter to make what appears to be a "white" light, truly white.

Present cockpit illumination allows only red and black markings to be seen. It is believed the new light will insure more accurate pilot perception.

ADVANCEMENT INTO THE MISSILE AGE has called for unusual achievements in support equipment as well as in the primary weapons. The pictured tractor-trailer, designed to transport the new *Minuteman* to and from its underground launching sites, is a good example. To stay within highway limitations of most states, it was necessary to extend the trailer over the cab to assure enough overall length to accommodate the 60-foot missile.

Aerospace Library

HISTORICAL

Hellbirds: The Story of the B-29s in Combat, by Wilbur H. Morrison. This is a crewman's personal account of the *Superforts* from India, across the central Pacific, and over Japan. (Duell, Sloan and Pearce, $3.50.)

Paul Gallico has authored an excellent work titled *The Hurricane Story*. It chronicles the contributions of this single-seater fighter in the famed Battle of Britain. (Doubleday, $3.95.)

Almost a companion piece is *The Sky Suspended: The Story of the Battle of Britain,* written by Drew Middleton. It describes the bitter aerial combat in this prolonged fight. (Longmans Green, $5.00.)

American Combat Planes by Ray Wagner is a history-encyclopedia of the development and employment of all U. S. military aircraft, from the Wright *Flyer* to the current models. (Doubleday, $9.95.)

Charles H. Gibbs-Smith has compiled a British version of the history of the air in his *The Aeroplane*. Its glossary contains a complete chronology of flight. (London, H. M. Stationery Office, $6.50.)

PROFESSIONAL

The Manned Missile: The Story of the B-70, Ed Rees. Rees has prepared an advanced look at USAF's new Mach 3 aerospace vehicle designed to bridge the gap between aircraft and spacecraft. (Duell, Sloan and Pearce, $3.50.)

Air Vice-Marshal Kingston-McCloughry presents an examination of the wide scope of problems in national defense strategy in his *Defense*. It contains a multitude of the newer aspects of the problem. (Praeger, $6.00.)

American Strategy for the Nuclear Age is a compilation of 33 essays by American statesmen, scholars, and military experts, edited by Walter F. Hahn and Col. John C. Neff. (Doubleday Anchor Book, $1.45.)

One of Duell, Sloan and Pearce's most recent releases is *Big Eight: The Biography of an Airplane*. It tells the civil and military story of the Douglas DC-8 jet transport. (Richard G. Hubler, $5.00.)

BIOGRAPHY

Always Another Dawn: The Story of a Rocket Test Pilot, A. Scott Crossfield with Clay Blair, Jr., relates Crossfield's fascinating accomplishments with emphasis on the X-15 program. (World Publishing Co., $4.95.)

You Ask It

I hold a GI insurance policy for $10,000 and want to change the beneficiaries. Is it necessary for me to inform those presently listed before I make such a change?

No. Designation of beneficiaries is entirely your own affair. Make any changes you see fit.

My GI insurance premium will soon come due and I have misplaced the premium notice sent to me. Can you tell me what information I should include with my check?

Give your full name, your address, and your policy number, including the letter prefix. If you have more than one policy, you have also been assigned a file number and should include that.

I will soon retire from the Air Force and intend to take a job considered hazardous. Are there any restrictions on my GI insurance which would invalidate my policy under such conditions?

No. A veteran may engage in any occupation, no matter how hazardous, without altering the terms of his policy.

I am a Korean veteran holding GI term insurance. I understand I can now convert it to a permanent policy.

That is correct. If your term policy has a prefix of "RS," it may either be exchanged for permanent plan insurance or for a term policy costing less.

I was recently discharged from the Air Force and received a lump sum disability payment. Will I have to repay this if the VA awards me a compensation for the same disability?

Yes. The law requires that VA monthly compensation payments revert to the Government until the amount recovered is equal to the amount of disability severance pay originally received.

I am planning on selling my GI home. The cash I receive will not be enough to settle the loan. Under these circumstances, must I get VA's consent to sell?

No. However, you need to apply to VA in the event you wish to be released from possible liability for the unpaid balance of the loan.

If I follow this plan and obtain such a release, will I be eligible for another GI loan?

You may or may not. Release from liability does not automatically restore eligibility. There are certain other conditions which must also be taken into consideration such as moving to another area to accept a better job. Better check first with your VA office.

Have any of the various bills to reopen lapsed life insurance to veterans been passed by Congress?

No. None have yet been approved although several have been introduced and action is still pending on a few.

THE GUARD GOES GLOBAL

by TSgt. John K. O'Doherty, *Airman Staff*

MILITARY AIR TRANSPORT SERVICE, America's strategic airlift force, is polishing a new, additional capability. For the greater part of a year now, transport aircraft of the Air National Guard have been flying the long overwater Pacific routes on missions levied by MATS' Western Transport Air Force.

Spectators on the ground at Kimpo in Korea, Tachikawa, Japan, or Hickam in Hawaii might have expressed surprise in the beginning as transports bearing the giant letters *Oklahoma Air National Guard,* or *New Hampshire Air National Guard,* rolled to a stop at the entrance to the MATS terminal. But the surprise is since dissipated, and ANG transport aircraft are now a familiar sight on the ramp at Travis AFB, Calif., MATS home terminal for the Pacific routes.

> . . . I have directed prompt action to increase our airlift capacity. Obtaining additional air transport mobility—and obtaining it now—will better assure the ability of our conventional forces to respond, with discrimination and speed, to any problem at any spot on the globe at any moment's notice. In particular it will enable us to meet any deliberate effort to avoid or divert our forces by starting limited wars in widely scattered parts of the globe.
>
> PRESIDENT JOHN F. KENNEDY
> *State of the Union Message*
> *January 30, 1961*

The appearance of National Guard aircraft on MATS airways stems from a relatively new concept of more effective utilization of Air Reserve Forces as valuable components of overall aerospace powder. The traditional role of the Air National Guard as a standby reserve is rapidly melting away under pressure from new doctrines. The image of the Guardsman as a "weekend warrior" or "part-time patriot" is as obsoleter as World War II bombing tactics.

The new complexion of strategic requirements is such that activities of the Air National Guard, and other reserve elements, must be closely correlated with those of active air commands. It has even been suggested that the term "reserve," as applied to the Air Guard, is no longer appropriate.

The Air Guard's initiation into the business of strategic airlift had its beginning in January 1960 when the Secretary of the Air Force directed the transfer of a number of C-97 *Stratofreighter* transports from MATS to ANG. This directive was the result of reappraisal of global Air Force requirements, as dictated by modifications of strategy and advances in weaponry.

First organizations to receive the new aircraft—and the new mission—were two squadrons of the California Air National Guard at Van Nuys, and one from the Minnesota Air National Guard at Minneapolis. The Minnesota unit was formerly equipped with F-89H jets flying air defense missions in support of ADC, and both California organizations previously flew the F-86H *Sabre* in a tactical fighter mission. The transition from jets to transports marks the first time that four-engine aircraft have been assigned to any reserve units. All Guard organizations involved in the changeover are redesignated Air Transport Squadrons (Heavy).

Shortly after the conversion was authorized by the Secretary of the Air Force, air crews and ground support personnel from the Guard squadrons reported to Travis AFB for transition training under MATS. It is notable that six pilots of the group topped the existing

Weekend Warriors of the Air National Guard are now contributing to the overall airlift capability of MATS as they fly training missions over the long overseas airways of the Pacific.

record mark of 96 percent for the academic phases. Twenty men of the ground crews toppled the old record of 92 percent for their phases of training. When the 12-week course was completed, the Guardsmen flew the aircraft back to their own bases, and proudly emblazoned the name of the home state on the fuselage.

Altogether, the year 1960 saw six ANG squadrons converted to C-97 type aircraft and groomed to operational readiness under MATS. Five others are scheduled to undergo transition during 1961, and an additional four in 1962. Training under the 1961 program was begun early in January as aircrews and ground support people from Tennessee, Georgia, Oklahoma, and Utah checked in to the SAC KC-97 school at Randolph AFB, Tex. First of the KC-97 tankers, made available to the Guard by SAC, were modified to cargo configuration by the Guardsmen themselves upon return to the home station. Eventually, as the conversion program nears completion, MATS will have as many ANG units under its supervision as active Air Force squadrons.

This significant augmentation in available airlift is expected to place ANG transports on MATS routes all over the world, as well as on the trans-Pacific airways they now cover. As the Guard goes global four squadrons east of the Mississippi will be assigned to EASTAF (MATS Eastern Transport Air Force), at McGuire AFB, N. J. McGuire is the terminal point for MATS routes to all of Europe, the Middle East, Africa, and India.

It is quite possible that eventually there will be at least one ANG transport in the air on a MATS mission every day of the year. In addition to the pioneer squadrons from California and Minnesota the Guard airlift package will include aircraft and crews from New Hampshire, Oklahoma, New York, Pennsylvania, Texas, Utah, Delaware, Georgia, and Tennessee.

When U. S. forces were demobilized after World War II, the various states started from rock bottom to build the flying units that became the Air National Guard. Prior to Pearl Harbor there existed a few observation squadrons attached to National Guard ground troops, but these—like so many other concepts—were rendered completely obsolete by the tremendous airpower advances of the 1940s. The veterans of the Army Air Forces carried the fever of enthusiasm for flying into civilian life, and laid the foundation for the Air National Guard as a stand-by reserve to back the regular Air Force. But as the weekend warriors assembled for training on Saturdays and Sundays—in an atmosphere that might have been, understandably, less than urgent—the traditional "rear guard" militia concept remained.

Then came the experience of Korea. Air Guard units flying B-26 bombers, F-51 *Mustangs,* and F-80 *Shooting Star* jets were rushed to the Far East. Although the Guardsmen acquitted themselves with distinction, the whole unpleasant episode pointed up the importance of rapid responsiveness from the Guard in time of emergency. This marked the beginning of the end for the stand-by concept.

After Korea strong official emphasis was placed on readiness, and ConAC (Continental Air Command) was charged with responsibility for training Guard units. Then in 1960 a new milestone in readiness was passed when all ANG units were placed under operational control of the major air command they will serve during war or other emergency.

Under this management plan, MATS is responsible for inspection and supervision of training for the Guard's air transport units. Training requirements are established by the parent command, and the inspection system includes continuing scrutiny of operational performance and regularly scheduled IG-type inspections.

As the C-97 transports are flown from transition training sites to Air Guard bases the State Guard identification and organization are painted on the fuselage.

Each ANG transport squadron is authorized eight aircraft with two crews for each airplane, including pilots, navigators, flight engineers, and loadmasters. Appropriate numbers of maintenance and ground support personnel are also assigned on the manning document, so that an ANG transport squadron is actually a more complete operational entity than a flying squadron of the active Air Force.

Under the training criteria established by MATS every aircrew is required to make two overwater flights per year. In meeting this requirement the Guard crew reports to Travis as a unit with one of their own squadron aircraft at the appointed time. The scheduled flight is assigned a MATS designator—or control number—and the package unit, aircraft and aircrew, moves into the orderly procession of MATS traffic.

Maj. R. W. Wiessner, still wearing his fighter-pilot gear, looks over the C-97.

From this point, the Guard crew assumes exactly the same duties and responsibilities as the regular MATS aircrews flying out of Travis. The loadmaster checks his cargo, sees that it is properly secured—in accordance with MATS directives. The navigator examines his charts as the crew collectively weighs the factors of weather, payload, fuel consumption, and distance so as to arrive at a proper balance. When the C-97 moves into position at the end of the runway it is cleared for takeoff by the tower as a MATS flight, outbound for Hickam or points west. On the early flights over unfamiliar routes in 1960, MATS, with parental thoughtfulness, provided supplemental crew members from among its regular personnel to usher the program off to a smooth start.

These twice-yearly overwater flights (32 flights per squadron) are in addition to the routine local or cross-country flights conducted by ANG squadrons from the home base. Each pilot is authorized 150 hours of flying time annually for training, and some flight engineers of the Guard have already logged more than 1,000 hours in the C-97. Counting the normal 48 training periods authorized for Guard personnel each year, the 36 extra periods allotted to aircrews, and the usual two-week summer training stint, it is entirely possible for a flying Guardsman to be on active duty for the equivalent of 99 days annually. The weekend warrior has extended his activities considerably.

When the conversion of ANG squadrons to C-97 transports is completed, there will then be available to MATS an additional airlift capacity of more than 28,000 tons, even at the unexacting level of two overseas flights per crew annually. But in spite of this significant military capability, and despite its new closer association with the active Air Force, the Air Guard has not abandoned its traditional character completely. Although the emphasis is on readiness, instant responsiveness, the Guard is still essentially a civilian reserve, reflecting the vigorous, patriotic interest of the American people in the national welfare.

Of the 72,000 men comprising the entire Air Guard, 58,500 are civilian businessmen, executives, salesmen,

Capt. K. J. Bays, an assistant school principal at Tulsa, receives cockpit check from Capt. Louis B. Blake, who runs a crop-dusting business at Cushing, Okla. Blake attended original C-97 class at Travis.

"butchers, bakers, and candlestick makers" who devote a portion of their spare time to Guard activities. The remaining minority of 13,500 are "air technicians" who provide the nucleus necessary to keep Guard bases in operational readiness, not only on weekends but on every other day of the year. These air technicians wear two hats. On the one hand they are full-time State civilian employees filling positions authorized in the Guard organization. They are also members of the Guard unit in the full military sense. As such, they participate in training and operational activities in addition to their full-time employment as squadron maintenance officer, aircraft engine technician, or whatever.

It is impossible to point at any particular individual and describe him as a typical Guardsman. All share the common bond of interest in aviation and awareness of the importance of the national defense. But they stem from practically every level of the socio-economic scale and every age group from late teens to the maturity of the 40s. There is a good sprinkling of World War II types, a little grey at the temples now, but possessed of a wealth of valuable experience. There are numerous veterans of Korea, and a broad plateau of relatively recent Air Force graduates with one or two hitches of active duty to their credit. There is also a new beardless generation of citizen airmen coming along, youngsters of 17 and over who are fulfilling their military obligation through service with the Guard.

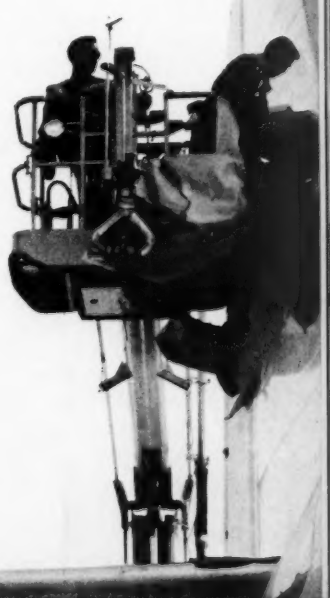
The crew of a C-97 of the New Hampshire Air National Guard on a flight to Kimpo Air Base in Korea offers an approximate profile of the composition of the Guard generally. Maj. James E. Cuddihee, the pilot, is a World War II veteran with 8,000 flying hours to his credit. He flew P-47 *Thunderbolts* in Europe before being shot down and captured by the Germans. Then along with his present copilot, Capt. John Enright, he flew F-86 *Sabrejets* for the New Hampshire Guard before making the most recent transition to cargo transports.

Capt. Henry Simonds, the navigator, is also a WW II veteran, but has in addition chalked up years of experience as a teacher of mathematics in New England schools. TSgt. Robert Ross, flight engineer, is a veteran of six years' active duty with MATS, where he did substantially the same job he now does for the Air Guard. TSgt. Richard C. Nault, the second engineer, served four years in USAF in the maintenance and engineering fields. Finally, A1C Robert I. Hicks, loadmaster, works on a farm in civilian life.

The attitude of MATS—official and unofficial—to the new management plan is distinctly enthusiastic at all levels, from MATSmen on the flight line to the top-most echelon of command. Following conversion of the first squadrons, Lt. Gen. Joe W. Kelly, Commander MATS, had this to say: [The] "Air National Guard squadrons compiled an excellent record in making the transition from fighters to C-97 heavy airlift aircraft. It should be made clear that MATS wants to place more and more reliance on Reserve Forces for dependable back-up in the global strategic airlift mission."

Governors of the various states involved in this new mission for the Air Guard have expressed gratification and interest in the changeover. Although responsibility for operational training passes to MATS, this does not preempt the rights of jurisdiction and control exercised by the individual states. Thus the governors of the parent states will have available to them a substantial airlift capability which might be used within state boundaries in emergency. In connection with floods or other disaster, rapid transportation of food and medicine, could spell the difference between life and death for many citizens.

As the nation's strategic airlift force, MATS is a vital element of the counterforce upon which the U. S. depends to maintain the peace. Inclusion of Air National Guard units as components of strategic airlift capability not only adds an extra string to the MATS strongbow, but demonstrates also that American determination to deter aggression is a facet of the national purpose upon which the United States are truly united.



At Grenier Field the protective masking is removed to reveal the identity of the New Hampshire Air Guard.

You should know

PLANS FOR RESUMPTION OF OVERSEA DEPENDENT TRAVEL

General plans and policies are now being determined for the anticipated resumption this summer of authorized dependent travel to oversea areas. Quotas under the reduced ceiling required by the directives on oversea dependent strength will be issued as soon as possible. Commands administering these ceilings will be given maximum authority to establish eligibility rules within a framework of broad policy guidance.

DISCIPLINE AND MORALE

A military organization is not an effective force without good morale. And discipline—that essential attitude leading to proper obedience and conduct under all conditions—can be nurtured and maintained by high morale. The state of morale makes the difference between voluntary and forced discipline.

Availability of every modern convenience is not necessarily the source of good morale. Good morale can come when personnel *know* the command's goal, endeavor to reach it, overcome adversities, and in so doing accomplish difficult tasks—and then are properly recognized by the commander.

OPERATION BOOTSTRAP TRAVEL

If you are going to school on TDY under "Operation Bootstrap" (AFR 34-52), you should know that the Government does not pay for travel or transportation of PCS or TDY allowance of household goods and baggage to and from school. When permitted to attend school under this program while en route to a new permanent station, shipment of household goods and baggage is authorized from the last permanent station to the new permanent station.

You should not request shipment of household goods and baggage to the school or another place in lieu of the new permanent station. If you do this, you will be personally liable for any costs in excess of shipment to the new permanent station, as well as reshipment from the school or alternate place upon completion of the course.

Dependents are authorized transportation only under the PCS portion of the order from last permanent station to new permanent station. Such transportation may be furnished by issuance of transportation request for through transportation to the next permanent station, or by reimbursement when dependents have completed travel to the next station at their own expense.

—TIG Brief

SERIAL NUMBERS TELL ALL

An enlisted man's serial number appears to most to be an uninteresting series of digits with no personality of its own.

But with a little background on the formulation and issuance of these numbers you can tell a great deal about the man who was issued this number.

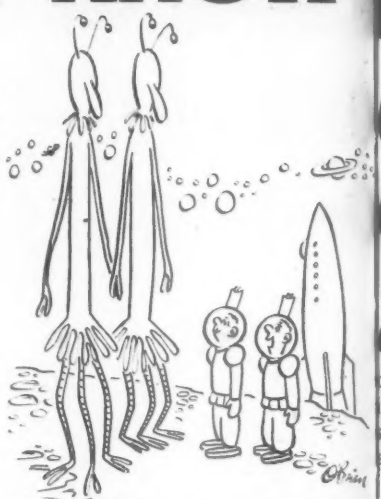
Most common are those that begin with the digit 1. This denotes that the man originally enlisted in the regular or reserve components of the U. S. Army or Air Force, after 1940.

The 2 at the start of the series gives evidence that he did a stint originally with the National Guard, before becoming a regular.

World War II inductees were issued a 3 or 4 and although they are in the regular Air Force now they still retain this original service number.

The 5 is also one of those who were selected by his friends and neighbors at the local draftboard, but was called up after 1948.

The majority of airmen have eight numbers in the AFSN. The real old timer, back in the days of



. . . and besides becoming missile pilots, you're sure bets for the AF Academy's basketball squad.

$21 a day once a month, will have seven digits and the first will be a 6. Occasionally you will find one with a 7. These were issued late in 1939 and 1940 when the 6 number sequence ran out.

The second digit also has a history all its own. That fellow with the broad "a" from Boston will have a 1 as the second number provided he enlisted in his native New England.

The Brooklyn boys and their fellow New Yorkers along with New Jerseyites will sport a 2 in this area. From Pennsylvania, the Keystoners will have a 3 and so its goes. South of the Mason-Dixon line we have the 4 and 5 designation.

Out Kansas way and the rest of the middle west are the 6s and 7s. Moving west out around Montana and Colorado way are the 8s, and out to the coast we hit the 9s.

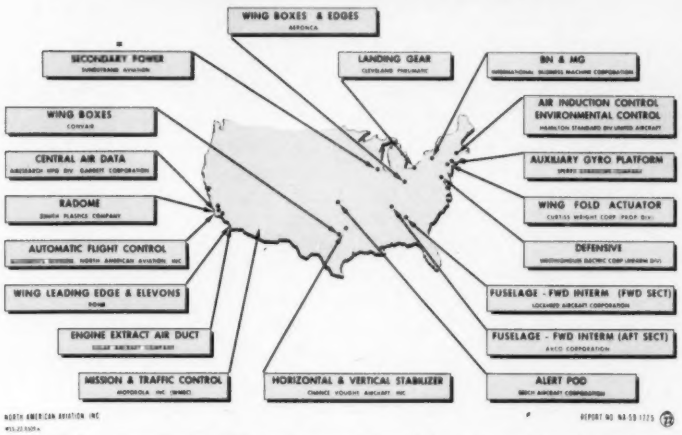
Oh yes, as a parting shot, the fellow with the 0 is not from outer space. He enlisted in Hawaii, Puerto Rico, Alaska, or any other place that has a recruiting station outside of the continental limits of the U. S.

—Comet, 600th Support Wing, Fuchu, Japan

B-70

On Course, On Target

B-70 WEAPON SYSTEM PROGRAM
SUBCONTRACTOR GEOGRAPHICAL LOCATION



CONSTRUCTION of the North American XB-70 *Valkyrie* is proceeding on schedule and first flight of the 2,000-m.p.h. experimental aircraft is expected in December 1962. The XB-70 will be strictly a research and development vehicle to prove the basic airworthiness of the stainless steel and titanium aircraft.

Several YB-70 models of the *Valkyrie* are being developed concurrently, and will be used to demonstrate the combat capability of the supersonic weapon system. The exact number of YB-70s to be built has not yet definitely been decided, but present Air Force plans call for 11 such planes. They will be constructed for ready installation of all the necessary military subsystems although much of the space in the first few YB models must be occupied by test instrumentation. Other than replacing the test instruments with the modular subsystems, very little modification will be needed to convert them to operational aircraft.

The first seven YB-70s will be used by the contractor and Air Research and Development Command for further flight and engineering tests. The last four YB aircraft will go directly to Strategic Air Command for suitability testing under operational conditions and for eventual crew training. The B-70 System Staff Officer at Headquarters USAF, Lt. Col. Rudolf J. Hertz, told THE AIRMAN that the rate of development, which depends on the funds provided, will determine when the first fully operational B-70 may be delivered to SAC.

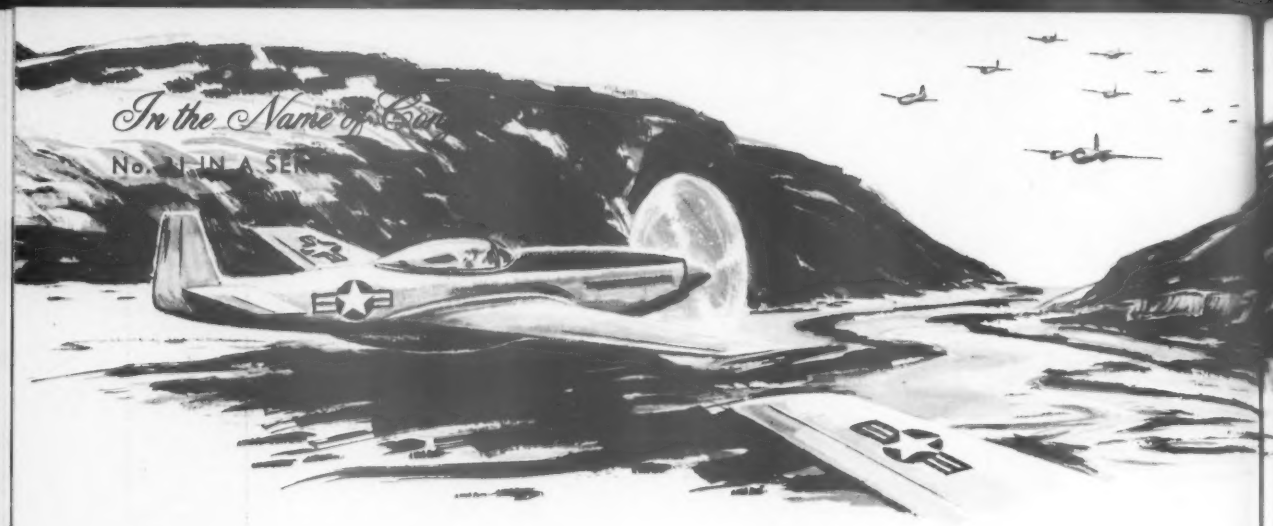
Colonel Hertz pointed out that the initial decision to go into production of fully operational B-70 weapon systems should be delayed until it is certain that the aircraft meets all design specifications. Both contractors need an early decision on the number of aircraft and their rate of production to make the most economical use of their highly skilled labor force and plant facilities. Production breaks, with plants and workers idle, are costly. Materials and long lead-time items cannot be ordered until the decision is made.

The first few YB models will not contain some of the subcontracted military subsystems since they cannot be tested until later. The space these subsystems would normally occupy is needed for test equipment anyway. The subsystems will be time-phased gradually into the later YBs so that each succeeding aircraft will be a more nearly complete weapon system.

Active design work on the B-70 weapon system began in January 1958, was slowed down in September of that year, and by December of 1959 the program had been narrowed to the development of a single prototype aircraft stripped of its military subsystems. Nearly all subcontracts were canceled or materially reduced by the prime contractor, North American Aviation. After exhaustive hearings in 1960, Congress in midsummer appropriated additional funds to permit restoration of limited B-70 weapon system development. A month later, North American released more than 11,000 basic engineering drawings representing more than six million engineering manhours so that construction could proceed.

Most of the 15 original subcontracting manufacturers who retained the necessary facilities, materials, technical knowledge, and organization have been given new contracts since last November. This has saved both time and money for the prime contractor and for the Air Force. International Business Machines had continued with its work on the advanced stellar-inertial bombing and navigation system. The Air Force had picked up IBM's canceled contract because of the critical time-phasing of this subsystem and because many of the components can be applied to other weapon systems. By January 1961, about 19 major subcontractors were back at work on B-70 systems.

Early in the program North American had estimated that they would spend 70 percent of the B-70 money outside its own plants. If they maintain this policy, more than two thirds of the expected 700 subcontractors will be small business concerns employing less than 500 persons. Altogether they expect that nearly 20,000 companies scattered all over the United States will supply parts and material for the *Valkyrie*. One subcontractor, the Garrett Corporation, declared when their contract was reinstated last fall that they would certainly stick to their policy of further subcontracting more than half of their multimillion-dollar program.



By January 1945, American forces were in the fi ive
to clear the enemy from the Philippines. Two Airm d n

THE EMBALMER AND T

by SMSgt. Hal Bamford

IN AUGUST 1941, William Arthur Shomo, a graduate embalmer and licensed funeral director in his native Pennsylvania, entered military service.

Aside from his chosen profession, there was little at the time to distinguish him from hundreds of young men who were pouring into the armed forces. Yet, before World War II ended some four years later, Maj. William A. Shomo was destined to write a chapter in American aerial history which stands unsurpassed to this day.

During the months immediately following his entry into the air arm, Bill Shomo progressed through the several stages of flight training. In March 1942, he received his pilot wings and appointment as a second lieutenant.

After graduation, Lieutenant Shomo filled various assignments throughout the United States including antisubmarine patrol duty from New Orleans AAB, La. As far as he was concerned, however, this was not the combat he sought so avidly.

Finally, late in 1943, the cherished overseas orders arrived and he joined the 82nd Tactical Reconnaissance Squadron in the Southwest Pacific Theater. Months of "routine" photo missions piled up as island-hopping Allied troops forced the enemy back.

By August 1944, the 82nd had moved forward to Mokmer airstrip on Biak Island. In mid-October they moved again, this time onto Wama airstrip on Morotai, just days before the planned invasion of Lingayen Gulf, Luzon, Philippine Islands.

For the next two months, the 82nd would be among the busiest units in the entire theater as they flew almost continual reccy patrols to determine the positions and strength of retreating Japanese units.

While still at Wama, the unit was refitted with F-6Ds, the reconnaissance version of the P-51, becoming the original *Mustang* organization in the Southwest Pacific.

Finally, on January 9, 1945, the 82nd and their week-old F-6Ds were ordered forward once more to begin operating from airstrips on Mindoro, just south of the key island of Luzon.

The following day, Captain Shomo was among those ordered out on a reconnaissance mission to the northern tip of Luzon. Until then, the aerial war had been a "hearsay" type of thing for him. Although he had flown innumerable photographic missions, he had yet to engage the enemy in aerial battle.

"I had waited 16 months in combat for an opportunity to tangle with a Jap airplane while airborne," he recalls. "Then on January 10 over Tugueguero Airport, I spotted an enemy dive bomber while it was approaching the airstrip to land. I shot it down for my first win."

Shomo of course had no way of knowing it, but the following day was to be the really historic occasion. On that morning, he and Lt. Paul Lipscomb were once again assigned the mission of photographing the Japanese airdromes on the northern tip of Luzon.

Their principal target was Aparri. Taking off from their Mindoro station, they worked their way northward up the valley of the Cagayan River, flying about 200 feet above the water.

As they approached Tugueguero Captain Shomo's pulse quickened at the scene of his so recent first kill.

Lt. Col. William A. Shomo

five
irmed more than their share.

T COWBOY

And here, once again, fate smiled on the 26-year-old squadron commander. Sweeping the skies for enemy aircraft, he noted a *Betty* bomber above and dead ahead. Hovering over the lone bomber were 12 fighters.

"With all of that escort, I figured some very important general or admiral must be a passenger on the bomber," Shomo reasons today. "So I gave the signal and Paul and I attacked."

Either the Japs did not see the two fighters coming or, because of their newness in the theater, they mistook them for friendly *Tonys*. Regardless of the reason, the pair was soon closing unopposed on their target.

The citation which accompanied Captain Shomo's Medal of Honor, awarded the following April, details the action of the next few minutes.

For conspicuous gallantry and intrepidity at the risk of his life above and beyond the call of duty. Major Shomo was lead pilot of a flight of two fighter planes charged with an armed photographic and strafing mission against the Aparri and Laoag airdromes. While enroute to the objective, he observed an enemy twin-engine bomber, protected by 12 fighters, flying about 2,500 feet above him and in the opposite direction. Although the odds were 13 to 2, Major Shomo immediately ordered an attack. Accompanied by his wing man he closed on the enemy formation in a climbing turn and scored hits on the leading plane of the third element, which exploded in midair. Major Shomo then attacked the second element from the left side of the formation and shot another fighter down in flames. When the enemy formed for counterattack, Major Shomo moved to the other side of the formation and hit a third fighter which exploded and fell. Diving below the bomber, he put a burst into its underside and it crashed and burned. Pulling up from this pass he encountered a fifth plane firing head on and destroyed it. He next dived upon the first element and shot down the lead plane; then diving to 300 feet in pursuit of another fighter he caught it with his initial burst and it crashed in flames. During this action his wingman had shot down three planes, while the three remaining fighters had fled into a cloud bank and escaped. Major Shomo's extraordinary gallantry and intrepidity in attacking such a far superior force and destroying seven enemy aircraft in one action is unparalleled in the Southwest Pacific Area.

Looking back, Shomo says, "When the combat ended, I had over 500 rounds of ammunition remaining and honestly believe that we could have shot down the other three that got away if they had not disappeared in the heavy cloud cover."

At any rate, the pair stayed around long enough to photograph the skeletons of their ten victims strewn about the surrounding countryside.

Three days later, Gen. George Kenney, area air commander, promoted Bill Shomo to major and filed a recommendation for the Medal of Honor. Its subsequent award represented USAF's 41st.

The seven victories scored by the youngster represented an all-time high for a single combat sortie and retains that place even today.

Several days later, General Kenney had occasion to meet the two high-scorers during a visit to their station. In *General Kenney Reports,* he describes their chat. "I asked them what they did for a living before they got into the Air Force. Lipscomb was a Texas Cowboy. Shomo—believe it or not—was a licensed embalmer."

Before his combat career ended, Major Shomo compiled a total of 203 missions. His aerial victories ended with that amazing single day's effort. However, he destroyed six fighters and 13 bombers on the ground.

In October 1945, Major Shomo returned to the United States and was discharged. For the next two years, he furthered his studies at the University of Pittsburgh, but the lure of flying proved too great and, in 1947, he accepted a regular commission and returned to active duty.

Since then, he has served in several responsible positions including Chief of SAC Fighter Operations in 1947-48; Deputy Chief of Operations, 56th Fighter Wing, Selfridge AFB, Mich., 1949-50; and Chief of Combat Operations, 31st Air Division, Minneapolis, Minn., 1952-53.

Currently, Lt. Col. William A. Shomo is Director of Operations for the 4601st Support Wing, which supervises the administration and operations of Dew line.

In addition to the Medal of Honor, this nation's highest award, Lt. Col. Shomo also received the Distinguished Flying Cross and the Air Medal with four Oak Leaf clusters. His post-war activities have twice been recognized with the Commendation Medal, and he is now rated a Command Pilot.

Clues from your Calendar

By the rude bridge that arched the flood,
Their flag to April's breeze unfurled,
Here once the embattled farmers stood,
And fired the shot heard round the world.

So runs the poet's tribute to the Minutemen of Lexington and Concord whose muskets waked for liberty the echoes which neither time nor history has yet stilled. And with the vivid scene at that rude bridge another poet has forever linked the name of Paul Revere who rode forth from Boston the previous night, "On the eighteenth of April, in Seventy-five," to alert the patriots of the countryside.

For Americans it is natural to think of the month first because then our Revolution began; the die was cast. Another April 18 brought us our first "V Day," for on that date in 1783 General George Washington proclaimed the cessation of hostilities in that Revolution. On the last day of the same month six years later Washington was inaugurated as our first President.

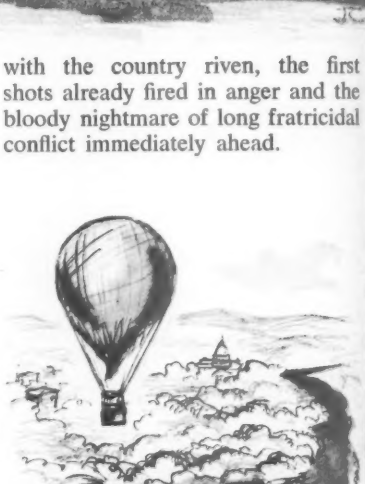
Apropos of April 18, airmen should always remember the entry that goes with it in our national chronicle for 1942. This was the day that General Jimmy Doolittle led his 16 B-25s off the Navy carrier, *Hornet,* on the daring surprise mission to bomb Japan — on a psychological strike bygone minutemen would appreciate.

But let us backtrack now to the early years of the Republic. Undoubtedly the most brilliant single coup in looking to the country's future expansion was the success of negotiations with France for the Louisiana Purchase while Thomas Jefferson was in the White House. The treaty consummating this great transaction bears the date of April 30, 1803.

For an outlay of approximately $15 million, the United States almost doubled its previous territorial extent with the acquisition of 827,957 square miles of land beyond the Mississippi. This was the vast Empire of the West whose conquest later wrote so many colorful pages in the proud story of American pioneering and accomplishment.

Incidentally, Jefferson was born April 13, 1743, and it happens that on the anniversary of his birth that the Stars and Stripes, as finally adopted by Congressional action, was first raised over the Capitol in Washington. By way of a footnote for those interested today in the winning of the West that Jefferson purchased, the Pony Express started operating on April 3, 1860.

The Civil War Centenary currently being observed is a somber reminder that the next April to come was a far grimmer month, with the country riven, the first shots already fired in anger and the bloody nightmare of long fratricidal conflict immediately ahead.



At this hectic time something occurred which seems to have escaped the notice of all but a few air historians. On April 19 a balloon ascent was made from Washington, then virtually a beleagured city, by James Allen, a civilian astronaut with the 1st Rhode Island State Militia who had reached the capital some days ahead of his regiment. Across the Potomac he could see the movements of the Confederate patrols and light forces which held the other shore. This, as the official AAF guide published in WW II noted, marked the inauguration of air-ground military teamwork.

To understand the ascent's im-

mediate value, be it remembered that at this time in 1861 Washington's telegraphic and rail links with the North and Midwest had been cut off. Only a small and mostly nondescript armed force existed for defense of the city. Rumors flew of impending attacks by Confederates in far superior strength, and the troops Lincoln had called for from Union states were still enroute. Merely to see no signs of preparations for an advance on the city was welcome intelligence. Within weeks civilian balloonists of more prominent repute had arrived and were able to telegraph down their observations. Their work received merited attention by writers and Allen recedes into the shadows of history.

Four Aprils later the awful agony was over but six days after Appomattox, Lincoln died on the 15th, victim of an assassin's bullet. A rarely noted fact is that of the six Chief Executives to die in office, three passed from the Scene this same month. Before Lincoln, President William Henry Harrison had succumbed to pneumonia on April 4, 1841, a month after his inauguration. And in 1945 FDR became the third, dying on April 12, by coincidence the same day of the month momentous in 1861 for the start of the bombardment of Fort Sumter.

Twice after Lincoln April has brought a call to arms. Near the end of the month in 1898 Congress voted a state of war existed with Spain. Less than a score of years later it was April 6, 1917, and we entered World War I.

The air effort the U. S. was able to put forth in that conflict was sparked by the drive of Billy Mitchell, pioneer prophet of airpower and bluntly outspoken in the advocacy of its developments. In 1916, as a captain, he had assumed charge of the Aeronautics Division of the Signal Corps on April 3.

Mitchell's efforts to start beefing up the Aeronautics Division after assuming charge had met with little success. It was not until the spring of 1918 that operational units were ready for regular missions. The first observation patrol over enemy lines by a U. S. squadron was flown April 11, and three days later pilots of a U. S. Pursuit Group shot down two enemy planes, the first to be destroyed by American airmen.

From the seven unready squadrons and 35 trained pilots with which we entered the war, U. S. air strength had increased to 45 operational squadrons with 767 pilots before the Armistice ended hostilities on November 11, 1918. Mitchell's steady criticism of the shortcomings he saw in official policy on airpower during the immediate postwar years eventually cost him his military career in 1926, but he continued to speak out sharply until his death in 1936. By then Hitler and Mussolini were in power and the handwriting was already on the wall. Fortunately, Mitchell's words had not been without cumulative effect, as witness the rapid expansion of Air Force

strength from less than 2,500 planes in September of 1939, to more than 12,000 by December of '41, and then to a peak of 79,908 for mounting the final offensive globally.

By the spring of 1945 the fate of the reeling Axis powers was already sealed and sincere people throughout much of the world were looking beyond the return of peace with the hope that this time some international instrumentality could be devised to safeguard that peace zealously by disposing of disputes or other threats which might arise to endanger it. On April 25 delegates representing 50 countries convened in San Francisco to draft the charter for the United Nations organization in whose effectiveness the realization of that hope would rest.

The wide optimism generated by the birth of UN has been subjected to some heavy buffeting and disillusionment by the course of many events since. The Cold War developed soon after the organization started to function. By the time the Berlin Blockade began on June 24, 1948, it had become apparent to our own and other free countries that an association for strictly defensive purposes was essential. On April 4, 1949, the treaty was signed in Washington for setting up NATO, which President Kennedy emphasized only several weeks ago is still "our central and most important defensive alliance . . . in the larger sense, much more."

A dozen days after the NATO treaty signing the Berlin Airlift chalked up its biggest day, delivering 12,940 tons of supplies by 1,398 flights within 24 hours. The blockade was abandoned within less than a month.

To close out our casual sampling of what various Aprils have brought over a span nearing two centuries, let us list a few items from the past decade with special Air Force interest.

On the second day of the month in 1951 ARDC attained full status as a major command, and on the 18th the first monkey was rocketed to high altitudes from Holloman AFB in a space biology experiment.

April 1, 1954, saw President Eisenhower put his signature to legislation creating the Air Academy. In '57 the 1st Missile Division was activated on the 15th and four days later the *Thor* IRBM soared away from Cape Canaveral in a successful test flight. In '59 the ICBM *Atlas* lifted off a pad there on the 5th in another satisfactory trial test.

And for this month last year, set down the Cape's brilliant performance in orbiting a pair of new space research vehicles in less than two weeks—*Tiros,* the weather observation satellite, on April 1, and *Transit,* the navigation aid satellite, on the 13th.

—WILLIAM A. KINNEY

CIRCUIT-RIDING JUDGE OF '61

MOST AIRMEN know they can depend on the base legal assistance officer for help and advice on a wide variety of personal problems. If a man is worried about an installment contract, or the intricacies of buying a home, he can seek the expert opinion of a qualified attorney in the Judge Advocate's office. Usually the matter entails no more than arranging an appointment, permission for an hour off from work, and a short walk over to the headquarters building.

But what about the fellow stationed at an AC&W site on top of Windswept Mountain? Just because he is isolated from the comforts of civilization, he is not necessarily exempt from involvement in personal legal difficulties. The permanent air base to which the station looks for support may be 40 miles distant over treacherous roads. What is this man to do?

The activities of the Air Force in the aerospace age require literally scores of such small, detached stations scattered in remote areas all over the country. They range from AC&W sites to weather stations, radio relay units, and a number of similar installations. Some of the detachments may number about a hundred men, others fewer than a dozen, and it is obviously impractical to provide all the facilities available at a conventional air base. And absences made necessary by pressure of personal affairs can constitute a serious drain when the complement of personnel is so small.

In recognition of this problem, Col. Maurice F. Biddle at the office of the Judge Advocate General, Hq USAF, devised a plan aimed at improving the situation for the men on the mountaintops. The program is known as the "Base Responsibility Plan" and initial phases were implemented in July 1960.

In a move that echoes back to the frontier days of circuit-riding judges, the plan proposes to employ the talents of 800 qualified lawyers who are members of the Air Force Reserve. These Reservists don the uniform for brief periods of military training at Reserve Centers as a matter of routine. The new plan emphasizes *utilization* which constitutes training, rather than training for training's sake.

Each of these 800 attorneys will be assigned to the Judge Advocate's office at the Air Force base nearest the town where he lives and conducts his civilian practice. The Judge Advocate, in turn, will assign some of these Reservists to the part-time duty of providing legal service to remote installations in the area.

Where a Reserve JA is not available to provide service for a particular site, USAF plans to award a reserve commission to a qualified lawyer living in the town nearest the site. These Associate Judge Advocates, instead of attending lectures and training sessions, will pay periodic visits to the site, or sites, for which they are responsible. Such utilization training will enable them to maintain continuing familiarity with the whole body of military law while at the same time making a useful contribution to the Air Force.

These periodic excursions to out-of-the-way sites, some by air, others by road, lack the convenience of training sessions held in comfortable Reserve Centers. Reservists involved in the program, however, have met the challenge with characteristic enthusiasm.

The idea of the circuit-riding JA was pioneered for a year by Reservist Lt. Col. Bruce Parks of Hawthorne, Nev. On alternate weeks he visited AC&W sites at Winnemucca and Tonopah, Nev., providing legal service as required. Colonel Biddle estimates that the saving accruing to the Air Force as a result of this arrangement is in the neighborhood of $150,000.

It is doubtful if airmen on the most remote sites will ever enjoy all the conveniences and services available to their brethren down on the plain. But this program for providing legal assistance whenever possible indicates the extent of Air Force interest in their welfare. The roving circuit judge is back, but now he uses a jeep or an airplane instead of a horse.

—JOHN K. O'DOHERTY

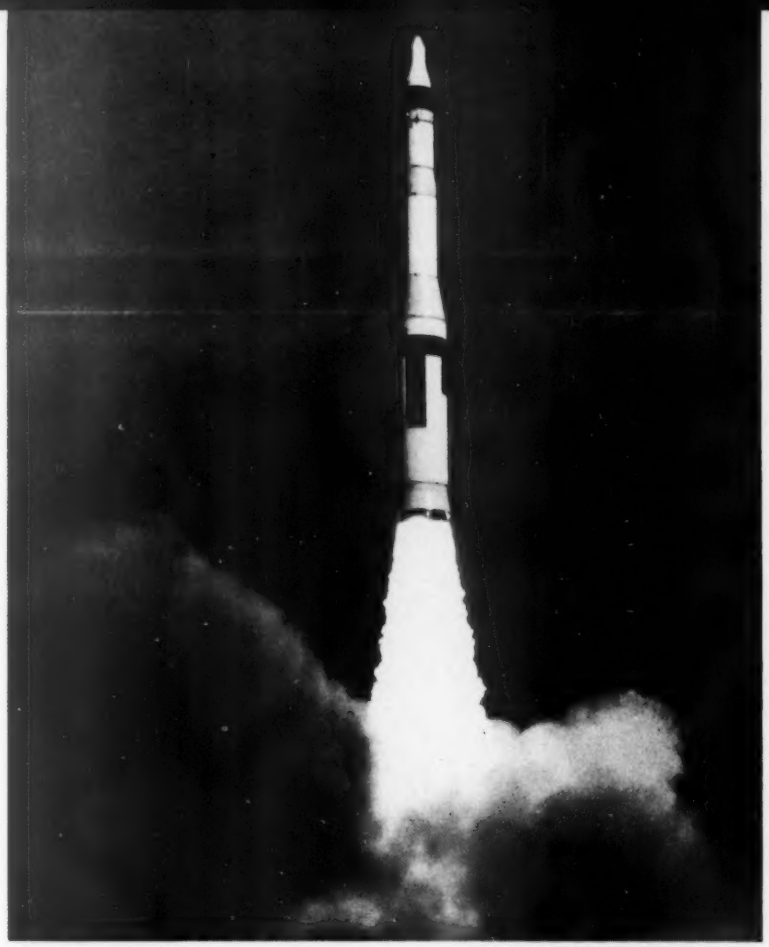


Photo by Boeing Airplane Co.

MINUTEMAN MILESTONE

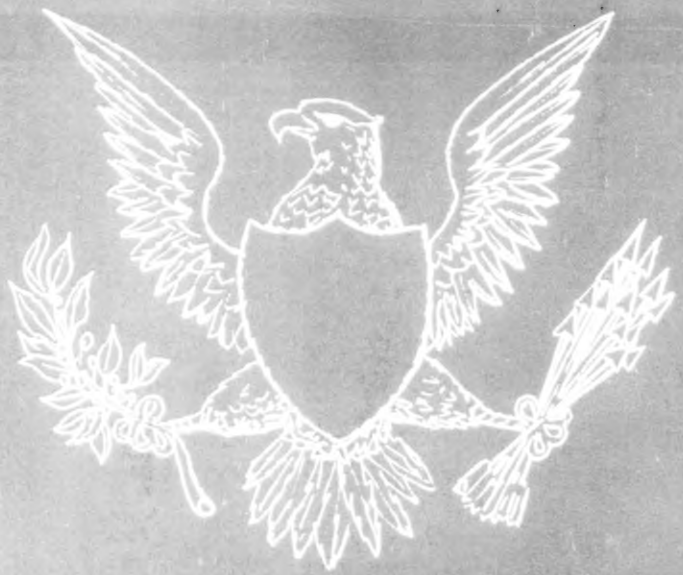
Today's first free flight test of a *Minuteman* ICBM from facilities of the Air Force Missile Test Center is one of the most significant steps this nation has ever taken toward gaining intercontinental missile supremacy in the critical years just ahead.

Today's launch is the most recent in the series of successes which have marked the *Minuteman* program since its inception, and which will lead to having the *Minuteman* operational at least a year earlier than was at first thought possible.

—General Thomas D. White
February 1, 1961

olive branch

bundle of arrows--



On the presidential shield
the eagle holds in his right talon
the olive branch
while in his left
a bundle of arrows—
we intend to give equal attention to both!

President John F. Kennedy